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ORIGINAL LECTURES.

LECTURE ON THE TREATMENT OF TYPHOID FEVER.

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(*Concluded from page 261.*)

We now come to the physical and pharmaceutical methods and measures used in the treatment of typhoid fever. Speaking generally, the physical measures are to be placed above the pharmaceutical, though the latter cannot be dispensed with. Had we a specific means of rendering harmless the cause of the disease, of course our endeavor would be to administer it at the beginning of the disease. But we have no specific which acts in the same way as quinine in intermittents or salicylic acid in acute rheumatism. The only drug to which we can ascribe a kind of specific action, is calomel, perhaps on account of its entire or partial change, by the chlorine of the sodium chloride in the intestinal juices, into corrosive sublimate. I give calomel in 3 doses of gram 0.5 in two hours, and then obtain a number of thin grass- or moss-green (calomel) stools and a considerable reduction of temperature, which often goes down to normal and lasts about 12 hours. These are the primary effects of calomel.

The secondary effects of the drug consist in a modification of the intensity of the infectious condition, as Liebermeister has shown. Those cases which are early subjected to treatment by calomel generally run a somewhat milder course than those in which it is not used, or only used later; milder both in regard to the fever as well as in the local affection of the intestine. The earlier calomel is given the better—best at all events within the first 5 days, but it should be used during the first week. The action of calomel (or the sublimate) is very possibly a sterilizing one on the specific bacteria vegetating in the intestine, but beyond this we know nothing more exact. An abortive action of calomel, such as has been claimed by Wunderlich, has not been shown. Griesinger, then Bäumler, and more recently Weil, have shown that neither the mortality is lessened by the use of calomel, nor the number of aborted cases increased, and that no other properties belong to calomel than those of a mild, non-irritating evacuant which reduces temperature. Against the assertions of some authors that we have to do here only with a simple eccoprotic effect, is our experience that the action of calomel on the temperature and the local intestinal affection is seen when active diarrhœa already exists; and there need be no further discussion as to the eccoprotic action. The attempt to fix the hypothetical specific action by long-continued calomel treatment, and to force a true abortive calomel treatment, has been made at different times, but without success. I have treated a series of cases with small doses of calomel for a long time, after having begun treatment with larger doses, but without obtaining any strikingly good result. So, too, the sublimate treatment of typhoid fever has been without good results.

Next to calomel, baths deserve the greatest consideration. On his admission to the hospital, if his condition is not too bad, the patient receives a warm bath to cleanse the skin and remove possible parasites. Then the course of the temperature for 12 or 24 hours is determined by bi-hourly measurements, best taken in the rectum, because the patient can better endure the short duration of the measurement here (2 or 3 minutes) than the 15 or 20 minute measurements in the axilla; and even in private practice rectal measurements are but seldom objected to. In private practice, meanwhile, the necessary directions and regulations as to the bath and care of the patient may be given, the sick-room furnished with a change of beds, and everything in the way of linen, vessels, etc., prepared for a long sickness.

When the normal temperature curve is determined it is best to begin immediately with the baths, first with luke-warm baths at 86°–81.5° F., 15 minutes long, and with continual stirring of the water and washing over of the upper part of the body, so far as it is not dipped into the water. The higher the temperature goes, the more severe the cerebral affection, the muscular weakness, and the intestinal affection, so much the cooler must be the bath; though for several years I have never given a bath lower than 63.5°, that is, below the temperature of the room. In the hospital the bath-tub is placed by the patient's bed, with a screen around it, and the patient is lifted into it. It is necessary to renew the water in the bath only once in 24 hours.

In many cases the bath is given only luke-warm (not under 75°) during the whole course of the illness, beginning each time with a temperature of 88.2°–86°, and while the patient sits in the bath the

[1] Translated, by permission of author and publishers, from advance sheets, by Wm. G. Eggleston, M.D., of Chicago.

temperature is lowered to 75° or 72.2° by the addition of water at the feet, with continual stirring up of the water. These gradually cooled baths I particularly recommend in weak, hyperæsthetic and nervous constitutions, especially in women and children, since they act very much better in regard to the subjective feelings of the patient than previously cooled baths, can be borne longer (20–30 minutes), and have all the favorable effects to be expected from baths in typhoid fever. In regard to those authors who find no advantage in the gradually cooled bath, to me it only shows an insufficient experience as to their effects. No method of bathing can be so well adapted to the individual, none so adapted to the subjective feeling of the patient as well as to the indications, as this method, which can be varied according to present indications from day to day and even from one bath to another. Eleven years ago I had the opportunity of testing upon myself the different forms, the cold, luke-warm, warm and gradually cooled bath in a tolerably severe case of typhoid fever, and I must say, impartially, that to me the gradually cooled bath was far more pleasant than the previously cooled, that I could bear it much longer without shivering, and that the after-effects on delirium, sleep, respiration and circulation was most gratifying, though the reduction of temperature was not very considerable (1°–2° C.), and lasted only a few hours. It is an error, as I can testify, to say that the stimulating and reflex effect is felt less in the gradually cooled than at the beginning of the cool bath. In this case only the unpleasant stimulant and reflex effects of the sudden cooling are wanting, while all the desired effects appear, and certainly they are more lasting than with the cool or cold bath, because the patient can remain for a longer time in the water.

For young, robust and vigorous constitutions the gradually cooled bath is not used; in these cases the simplest way is to use at once the cool or cold bath at 63.5°–65.7°, as Vogl and his military colleagues do with their soldiers. In this way the procedure is much simpler. But for the majority of patients in civil practice, in which nervous men and women, children, weak young people, flabby girls, etc., form a very large percentage, the gradually cooled bath is to be recommended, at least at the beginning. And the friends of the patient are much more in favor of baths if they can be spoken of as warm baths, and the patients become accustomed to them much more quickly and easily.

The very cold baths—under 63.5°—almost went out of use after physicians found out that the chief object of the baths was not the greatest possible lowering of the temperature, but the reflex excitation of the centres of innervation of the central nervous system, besides the cooling of the blood and tissues. This reflex action on the innervation of the circulation, respiration, digestion, and trophic spheres is obtained just as well by a bath at 65.7°–75°, and such a bath may be used with much less hesitation than one at 59°, which always seems like an heroic measure, whose effects on the heart and nervous system cannot be controlled with certainty.

It is in the highest degree important to vary the temperature of the bath according to the constitution of the patient, the stage of the disease, the time of day, the temperature of the patient, and the condition of the pulse and nervous system. Speaking generally I would give the following rules: The earlier the stage, the higher the fever, and the more robust the constitution, so much the cooler should be the water. On the other hand, the later the stage, the weaker the constitution, the more affected the nervous system, and the slower the pulse, the warmer should be the water. But in no case hesitate to give baths from fear of cardiac paralysis on account of an adynamic condition—by which I mean the type of a severe condition of infection. For it is in such conditions that the effects of the baths are most brilliantly shown. It is often the case that after a few baths the clinical picture is entirely changed; and there can be no danger whatever in the bath if it be warm enough. When I speak of warm baths, understand that a bath of 90.5° seems cool when compared with one at 104° (supposing this to be the patient's temperature), and will not only take away a good deal of heat, but acts in a reflex excitative way to a certain degree. And if you hesitate to give a gradually cooled bath on account of an adynamic condition, use a warm bath at 90.5°. This will have a comparatively satisfactory effect.

It has been recently shown that warm baths given in such adynamic conditions, with lowered temperature, do not further reduce the temperature, but raise it; which shows that an exciting effect can be produced upon the regulation centre of temperature. In such cases, therefore, a regulating and refreshing effect must be ascribed to the bath, without a reduction of temperature. You see then that even in reduced temperature the warm and luke-warm bath may act favorably on the infectious condition, and may be indicated by it. But these are exceptional cases. As a rule the best measure of the intensity and danger of the condition of infection is the temperature, and it is at the same time the most certain indication for the temperature and time of the bath.

Brand's dictum, "bathe at 103.1° (39.5°)," has been generally received, and found useful in practice. Routine directions are doubtless bad in practice, but here it is not so much a matter of routine as of direction on the part of the physician to the nurse, and the understanding of the directions. This is especially true in hospital practice, where directions are given to the nurse in regard to a number of patients in rapid succession, and the nurse is confused. Such is not the case in private practice.

In regard to the frequency of the baths during the day, and the time of day at which they are to be given, authors are not in accord. Many bathe patients from 10 to 12 times in 24 hours, others only from 2 to 4 times; many prefer to give baths at night, others by day and night, and the majority of physicians only during the day. Generally speaking I agree with Liebermeister, that baths have a better general effect when given during the normal temperature remission (6 P.M.–8 A.M.) than during the period of exacerbation (8 A.M.–6 P.M.). With

Immermann I have studied the so-called daily curve of typhoid fever by regular hourly measurements day and night, and have shown that the temperature, after it has reached its usual lowest point at 6 A.M., again rises after 8 P.M., reaches its highest point at 12 M., falls again somewhat from this time until 2 P.M, and reaches a second highest point at 6 P.M. In many cases the noon high point is absent, and there is only an afternoon high point, to which the morning temperature, at 8 A.M., regularly rises. In other cases the temperature reaches a higher point at noon than in the afternoon; and in still other, and rare cases, two and sometimes three high points are reached during the day, and one at midnight. In these cases the best time for the baths is from 6 to 10 P.M., and from 2 to 8 A.M. Liebermeister, as a rule, does not give baths during the day; and certainly baths given during the period of exacerbation are usually less effective. But I claim that we should not omit baths during the 10 hours from 8 A.M. till 6 P.M., and then give them between 10 P.M. and 2 A.M., when the temperature is comparatively low, if the temperature is very high.

As a rule 3 or 4 baths are given in 24 hours, though frequently enough there are cases in which 6 or 8 baths must be given; and there are also mild cases in which only 1 or 2 baths are necessary. Children should have less frequent and warmer baths than adults.

The duration of the bath should, as a rule, be not less than 15 nor more than 30 minutes. The signal for the end of the bath should not be a mere chilliness, but only an intense shivering. As a rule at the beginning the physician pays too much attention to the complaints of the patient, and the marked contraction of the cutaneous vessels. In time he will grow more callous to the patient's complaints, and give less attention to the pulse, which is usually very small after the bath, and often scarcely perceptible.

In the early days of the hydro-therapy of the infectious diseases, in the beginning of this century, cold douches were almost exclusively used instead of baths. Currie douched his typhoid patients with 5 gallons of sea-water in the empty bath, and this procedure was also generally used in the war of 1813–1815. At first Brand recommended this exclusively. At present, however, this method has but few supporters, and is only used when a very intense reflex action on the nervous system is desired, as, for example, in deep coma, general torpor, and comparative ineffectiveness of cool baths. The patient is placed (sitting) in an empty bath tub, and one or two bucketfuls of water poured on him in a broad stream, from not too great a height (12–20 inches above his head). Immediately before add after the douching some wine, or, in case of somewhat severe chilliness, some warm tea with rum should be given the patient. In the same way both before and after each cool bath in severe cases, and especially in cardiac weakness, wine or tea with cognac or rum should be given.

Other hydropathic methods which have been recommended as substitutes for douches and complete baths, such as the development of moist cold, the cold pack, washing with cold water or with a mixture of water and vinegar, have generally no other value than that of a temporary refreshening of the patient. On the temperature of the patient, and on the objective state of the nervous system, they have almost no influence. Do not rely upon them, nor be persuaded to use them by the timidity of the patient or his friends.

The previously described methodical hydro therapy should be carried out in every particular. The effect of the single baths and the temperature of the baths are important points in the prognosis and in judging of the intensity of the condition of infection. The resistance of the fever and of the nervous troubles to the bath is very different, and of considerable prognostic importance. I must again repeat that a case which is mild at the beginning, with slight resistance of the fever and unsteady temperature, may, in consequence of complications, etc., become severe, and end fatally. But as a general rule a slight resistance of the fever to the baths in the first and second weeks is a favorable symptom, and so much the more pleasant for the patient in that the baths need be less cold and less frequently repeated.

Spontaneous morning remissions are the signal for lessening the number and increasing the temperature of the baths. They are then necessary only in the afternoon, evening, and early in the night, and after this the necessity of the bath soon ceases. Many patients still ask for their continuance, though the majority are glad to be rid of them, even though they recognize their good effects.

Antipyretic drugs have recently come somewhat into disrepute, though, as I think, unjustly. It is fashionable to be skeptical in regard to the action of drugs, and the rapid succession of new antipyretics is productive of a superficial judgment as to their merits, and the condemnation of the whole group as of little value. And doubtless it is more convenient and less risky for the physician to order nothing and let everything go as it will, and more pleasant for the patient to take no drugs. But convenience and pleasantness should not be the physician's actuating motives of treatment, but the recognition of his duty and his responsibility for the life and health of the patient.

Until a few years ago quinine stood above all other antipyretics. Its antifebrile action is without doubt a very certain one, and until 1884 I used it, with baths, exclusively in many hundred cases of typhoid fever. But its undesirable secondary effects predominated over its antipyretic action, and many a time has an attack of cardiac weakness been observed after very large doses (2.5–3 grams). During my illness with typhoid in 1874 I took a great deal of quinine, and I must say that the subjective effects were most unpleasant; not so much the difficulty in hearing and the roaring in the ears as the general indescribable bad feeling of the whole body, and especially in the abdomen, which passed off in a few hours with painful tenesmus and diarrhœa. Such unpleasant action on the intestines has been frequently observed. The dose which I used was 2 grams in 2 doses for adults, at 5 and 6 P.M., or at 6

and 7, given in wafers. I seldom gave more than 2 grams, and frequently, as in women with weak constitutions 1.5 and 1 gram was given in the third week.

Of late years Knorr's antipyrin has completely supplanted quinine as an antipyretic in my practice. In doses of 5 grams (best given in doses of 2, 2, and 1 hourly in the evening after 6 o'clock) it is a much more certain antipyretic, and is entirely free from undesirable after effects. It is only infrequently that vomiting is caused by it, the sweating is moderate, sleep usually undisturbed, and the euphoria in the morning is in the highest degree pleasant. The patients are perhaps somewhat apathetic, but have nothing to complain of. The temperature falls from 2° to 4° C., and remains low for a tolerably long time; certainly as long as with quinine. The rubeoloid exanthem so frequently observed is of no significance. The prompt action on the rectum is also pleasant, in the same or somewhat larger doses. I have seen vomiting repeatedly after clysters of antipyrin, and others have observed the same effect. I have now used antipyrin in several hundred cases, and always with satisfaction, and can recommend it as a most trustworthy antipyretic.

Thallin is also a very good antipyretic, as I have shown by a series of cases, but it seems that it cannot take the place of antipyrin. Under its use I have repeatedly observed the same shivering with the reascension of the temperature as with kairin. It is in favor of thallin that it acts in comparatively small doses. We use about one-fourth as much as the dose of antipyrin—.25—given 4 or 5 times.

Antifebrin, which we have used since the first notice of it from Kussmaul's clinic, and in comparison with antipyrin, is a valuable antipyretic. Our experiments with it have given extraordinarily favorable results. Its action in fever is very certain, the secondary effects are but slight and temporary, and its administration is followed by great euphoria and decided improvement in appetite. The drug has the very great advantage that it acts in such small doses (one-fifth or one fourth the dose of antipyrin), and that it is so cheap.

Kairin and salicylate of soda are perhaps too antiquated to be considered antipyretics.

The treatment of individual symptoms, symptom excesses, plays an important part in the treatment of typhoid fever. It has already been said that so severe an infection of so great length and of such deleterious action on the nutrition of the animal cells must have a corresponding amount of organic disturbances in its course, each one of which may threaten life, and require skill on the part of the physician. What cell territories are affected by the destructive influences of the infection—the typhoid bacilli and their products—whether the brain, the kidneys, the parotid gland, the bronchial mucous membrane, the pulmonary tissue or the skin, depend upon factors which are only partly known to us. Of how great importance are proper innervation and circulation is shown by the good effects of baths and rubbing on the nutrition of the skin during typhoid fever.

The cerebral symptoms, headache, oppression, vertigo, generally call for the permanent use of ice-bladders. By far the greater number of patients, and in all in whom an antipyretic treatment gives a sensorium, find the effect of the ice-bladder very grateful, and call for them after they have seen their effect. But there are some patients, especially those of a nervous nature, to whom permanent cooling of the head is unpleasant. In such cases the subjective feelings of the patient must be taken into consideration.

Sleeplessness, restlessness and tossing at night are best controlled by a moderate dose of morphia; I usually begin with a dose of 1 centigram, and afterwards go up to 1.5 or 2 cgm. I have never seen such after effects as hyperæmia of the brain, increase of headache, etc. Most patients praise the peaceful rest which morphine gives them.

For very active delirium with bodily unrest, the condition which gave rise to the old term *febris nervosa versatilis*, luke-warm and warm baths, as recommended above, should be given in the evening and the early part of the night. If these do not produce the desired effect a hypodermatic injection of morphine should be given. In the severe and more torpid type of cerebral troubles, which years ago was known as *febris nervosa stupida*, cold baths with short douches are best, and act better than morphine in giving a few hours of peaceful sleep.

Cardiac weakness is *the* phenomenon which is of most dangerous import, and demands the greatest attention on the part of the physician and attendants. This condition is always to be expected when a patient comes into an attack of typhoid fever with a weakened heart, as, for example, after an attack of endo-myo-pericarditis, in cases of valvular disease, dilatation of the ventricles, muscular weakness from strain, from intemperance, etc. The danger may be recognized early by the comparative high pulse rate at the beginning. As a rule the pulse then becomes smaller, and the temperature of the skin falls in consequence of the insufficient filling of the peripheral arteries. High blood temperature with cool extremities, very frequent, small and irregular pulse, pale or pale livid color of the skin, these symptoms show a most significant complex, and demand the most energetic use of stimulants and the most careful overlooking of the whole dietetic arrangement.

As regards drugs in this condition I give decided preference to camphor, because it can be given subcutaneously in almost unlimited quantities and as often as desired without the slightest local troubles. The action of subcutaneous injections of oleum camphoratum fortius (1 part of camphor to 5 of olive oil) from 2 to 5 syringefuls, is most satisfactory and continues for a considerable time. In a few threatening conditions 1 or 2 syringefuls may be injected every 3 hours, or it may also be given internally tolerably freely. Of wines I give champagne and of the concentrated alcoholic stimulants I give preference to cognac. Too much of a good thing is less harmful than too little in these cases. The quantity to be given in 24 hours must be graduated by the indications, and by the results of the first doses.

Bed sores may be almost absolutely prevented by a large water mattrass. In cases in which they have developed before the use of the water mattrass, they may usually be brought to a stand-still, and generally improved by the mattrass. For dressing them boracic acid salve, zinc and lead plaster mulls and white lead plaster should be used. Even with the best dressings salves and plasters cannot be held on the sacrum if the patient lies on the back. It is therefore best that the patient, even when he uses a water mattrass, should lie on his sides for a few hours each day; but during the height of the fever this cannot be done. It is possible during the period of remission, however, and in this stage healing takes place more rapidly. But, as a matter of fact, position, antiseptic dressings, etc., are of no value without a water mattrass; though when antipyretic treatment and a water mattrass are used from the beginning of the illness bed-sores rarely occur.

Such affections of the skin as furuncles, circumscribed gangrene, etc., which are seen in cases of severe typhoid fever which are indifferently treated, rarely or never occur under antipyretic treatment; it is then in the power of the physician to prevent them. Baths not only cleanse the skin, but improve its circulation and nutrition, so that the functions of the outer skin, the blood supply of the cutis, and the secretions of the sebaceous glands, are much better than with the indifferent treatment of typhoid fever.

In very extensive intestinal affection in the course of typhoid diarrhœa and meteorism are often excessive. Faulty diet and frequent use of opium and tannin, and the like, are chiefly responsible for these conditions. Do not under-rate the danger of extensive meteorism. Aside from the stretching and the irritation of the nerves of the intestinal wall, the secondary effects upon the lungs and heart may cause serious trouble. To dissipate this condition one or two ice-bladders may be placed on the abdomen, or Priessnitz's pack may be used on the abdomen. If this be not sufficient two doses of calomel, of 0.3 each, as recommended by Friedreich, often have the desired effect. Naphthalin, and turpentine clysters (a teaspoonful of spirits of turpentine) are also to be recommended.[2] Massage of the abdomen has been recommended, but there is danger of its causing perforation of the intestine, especiallly in the hands of a layman.

Diarrhœa should, as a rule, not be treated when it is not too frequent; that is, when there are not more than 4 or 5 stools in 24 hours. If treatment seem necessary small clysters of opium paste (decoc. amyl. 30 grams, tinct. thebaic. gtt. xx) may be used. The best is the thin clyster made in the house, and injected after the addition of tincture of opium. These may be applied, when necessary, once or twice daily, and not only give rest to the intestine, but act well on the general feelings of the patient by dissipating the uneasy sensations in the abdomen.

Intestinal hæmorrhage is a very annoying, and prognostically a grave incident, though the mortality in my cases has not been very large: in the last 10 years I have lost only 25 per cent. of my cases that had intestinal hæmorrhage, while Liebermeister lost 38.6 per cent., and Griesinger lost 31.2 per cent. Immediately upon the beginning of intestinal hæmorrhage every kind of food, all medicine, the baths, and every movement of the body are discontinued, and two ice-bladders placed over the abdomen. Thirst is quenched only with small bits of ice. As a styptic a solution of sclerotic acid (1 : 5, in water) is given subcutaneously, a syringeful every half hour. The injection burns, but if properly dissipated by rubbing does not cause an abscess, while the extract secalis cornuti (German Phar., 2d edition) not infrequently does. In very profuse hæmorrhage, threatening life, I use enemata of ice-water, the influence of which on the intestinal ulcer is not only of a direct but also of a reflex nature.

As regards the use of styptics, such as acetate of lead, which many authors advise (in doses of 0.2 gram hourly at first, then every 2 hours, and later less often, Weil), I have had no experience. I have always been afraid of exciting peristaltic action, and on that account have avoided the giving of any and all medicine by the mouth. It is possible that I am wrong, however. The recommendation of acetate of lead by many authors is certainly not without reason. At all events, I recommend that the diet for several days should consist of absolutely nothing, until the immediate danger is past, and there is less fear of a return of the hæmorrhage. When the hæmorrhage is very profuse and death from cardiac paralysis is threatened, I would recommend injections of blood or salt water by the method described in a previous lecture. A year ago I made a blood injection on account of hæmorrhage in a case of typhoid fever, and with a favorable result.

Bleeding during the period of late healing (fourth to sixth week) is more grave as regards prognosis than during the period of casting off the scab (in the second or third week), because it is in this case almost always due to delayed healing of the ulcer and a scorbutic condition of the walls of the ulcer, in which the bleeding is very gradual but lasts a long time. It is important to know this, inasmuch as it renders the prognosis much more grave, and calls for very energetic treatment. In such cases acetate of lead and other methods come into use.

Perforation of the intestine is the gravest accident in typhoid fever. The prognosis is almost absolutely fatal. Some cases of recovery have been observed, as by Leibermeister. Two years ago, in my clinic, there was a case of indisputable perforation, which was sacculated. The air which entered the peritoneal sac was withdrawn by means of a trocar, and the sac was healed up, without its being necessary to open the sacculated perforation opening. In case of perforation you cannot do better than to give opium *per os* and *per anum* in tolerably large doses continually, as in developing peritonitis the rapid absorption of opium is not very certain; injections of morphia may also be given. One or two ice-bladders should be placed over the abdomen, no food whatever

[2] Turpentine given internally, in milk or in emulsion, seems to do a great deal in the way of counteracting meteorism. Bell, and more recently Kesteven, have called attention to the value of eucalyptol for this condition.—[*Trans.*]

should be given, thirst should be quenched by small pieces of ice, and every movement of the body should be avoided. Should the most favorable termination (sacculation of the perforation) occur, the sacculation should be opened and treated antiseptically, as in a case of perforation of the intestine (of unknown origin) recently reported by E. Wagner, which terminated favorably. Puncture of the abdomen with a thin trocar to reduce tension in the peritoneal cavity is scarcely ever of more than temporary benefit. A curative effect, on account of the generally already existing purulent peritonitis, is scarcely ever to be looked for.[3]

The treatment of the most important complications, such as pneumonia, erysipelas, parotitis, otitis, etc., must be regulated by the rules for the treatment of these processes. At present we will only speak of the prophylactic treatment, which gives better results than the medicinal. These complications have now become very much less frequent under methodical antipyresis. It is highly probable that these complications are the results of secondary bacterial invasions. Not only is it best to guard against such bacterial invasions by disinfection of the places in which they are likely to lodge, but also against their further growth by cleansing the superficial membranes, removing dried secretions, and cleansing the fissures beneath them. The lodgment of Fehleisen's streptococcus in a fissure under the dried crusts of secretions on the alæ of the nose or at the corners of the mouth, in the mucous membrane of the mouth, throat, Eustachian tubes, Steno's duct, and thus the beginning of parotitis, etc., is very probable, and this view is supported by the fact that these complications are only seen in severe cases, and that they may be prevented by careful cleansing and washing of the mouth and nose.

The greatest care should therefore be given to the depurative and cosmetic treatment of the mucous membranes of the nose and mouth, in order to prevent fissures and excoriations, wherever it is possible for them to develop. In this the value of an experienced and careful nurse is best seen. The mouth should be washed daily with luke-warm borated water, the nose syringed with the same, the alæ of the nose and the lips covered with paraffin, boracic acid salve or borated lanolin, and the smallest excoriation brushed with chloride of zinc or sublimate solution, then covered with boracic acid ointment, and with an antiseptic dressing.

The care of convalescence from typhoid fever is not the lightest and most thankful task of the physician. When the fever ceases patients are anxious to get out of bed, to eat, to walk about, to talk, and receive visits. Concede nothing. It is better to be too strict than to make concessions that may cause trouble. Complete rest of body and mind is essential in convalescence. We often see, after too much liberty, and too many visitors, a slight rise of temperature in the evening, a restless night, palpitation of the heart, headache, etc. The building up of the muscular system requires several weeks, and any strain, mental or bodily, may cause cardiac acceleration and arythmia, sleeplessness and slight rise of temperature. These points are especially important in regard to those who wish to think of or discuss business affairs after an attack of typhoid fever. Even after the mildest case the patient should not leave the bed before the fourteenth day; and after a severe attack he should not be allowed to get up before the lapse of three or four weeks. The nervous and muscular systems are by this time so strengthened that the patient may soon go into the open air, and the fresh air will then further the return to health more in a few days than would a week in a reclining chair. The most necessary visits may be permitted, but they should be limited to 10 minutes.

In regard to relapse of typhoid fever: The careful physician will be warned of its possibility by the slow regression of the spleen, and will be all the more careful as regards the patient's diet, condition and surroundings. While I doubt if a slight error in diet, a visit, or a mental disturbance may be the cause of a relapse, I think that such an error may precipitate it.

The treatment of the relapse is about the same as that of the primary attack, but milder. Luke-warm and warm baths are sufficient, and antipyretics are either avoided or given in half the ordinary doses. In some cases in which the splenic tumor indicated a tendency to a relapse I have given 1 gram of quinine a day for several days. In many of these cases the spleen was rapidly reduced in size; but it cannot be proved that the relapse would have occurred had not the quinine been given.

In one or two months after convalescence has been fully established, the patient may be sent away from home to the mountains or to a climatic resort, and, when circumstances permit, he should have complete rest for a year.

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[3] It is difficult to imagine why Professor Ziemssen does not even refer to the surgical treatment of perforation of typhoid ulcers—perforative peritonitis. The question as to whether already existing peritonitis contraindicates operation has been settled by the successes of Schramm, Boully, Israel, Litten, Keith, Wells, Tait and many others. That an operation of this kind on a typhoid patient is a serious matter must be admitted; but it has been shown that peritonitis often rapidly subsides after an operation has been made, and the abdomen washed out and drained. Three years ago Miculicz reported a successful case of suture of the intestine for perforation by typhoid ulcer. The question seems to be so well settled by the successful operations for perforative, purulent and other forms of peritonitis that, while the time for the discussion of its justifiableness is past, it is certainly deserving of mention. "It must be submitted as a conclusion from facts and recent experience, that the most rational treatment of peritonitis, especially of the graver forms, is by abdominal section." (Stephen Smith, Operative Surgery.)

In peritonitis from intestinal perforation, says Oberst, the diagnosis is surely fair, though he thinks washing out and drainage are favorable only when either there is an encapsulated abscess or no extensive adhesions between loops of intestines have taken place. In Miculicz's case a quart of pus was removed, and he sewed up a 6x4 cm. perforation in the loop of the ileum. The operation was performed 72 hours after the accident. Oberst operated in a case of perforation of prolapsed scrotal hernia, 4 days after the accident and when the patient was in a state of collapse. The patient's condition was such that suture of the gut did not seem warranted, and an anus prænaturalis was made. After first 5 days there was no pain or fever. But nutrition was difficult, and the patient died of hypostatic pneumonia and decubitus nine weeks after the operation. The case is reported in Centralbl. f. Chir., No. 20, 1885.

See Miculicz, Laparotomie bei Magen und Darmperforation Sammlung klinischer Vorträge, No. 262; Senn's "Present Status of Abdominal Surgery," THE JOURNAL, May 29 and June 5, 1886; THE JOURNAL, January 23, 1885; Polaillon, Bull. de l'Académie de Médecine, Paris, 1884, 2, s. xiv, 860-862; R. J. Hall, Suppurative Peritonitis, etc., N. Y. Med. Journ., 1886, xliii, 662; Barker, British Medical Journal, 1886, i, 618; Wylie, N. Y. Med. Record, 1887, xxx, 553; Treves, Medical Press and Circular, 1885, n. s., xxxix, 398; Gaston, THE JOURNAL, August 27, 1887. [*Trans.*]

ORIGINAL ARTICLES.

THE BURTON CASE.

Read in the Section on Medical Jurisprudence, at the Thirty-Eighth Annual Meeting of the American Medical Association, June, 1887.

BY W. THORNTON PARKER, M.D.,

OF NEWPORT, R. I.

On the morning of October 6, 1885, the quiet town of Newport, R. I., was startled by the report that Benjamin J. Burton, an industrious and inoffensive colored man, had committed suicide by shooting himself in the head and in the heart. The act was supposed to have been committed just after finishing his breakfast. The body was discovered lying on its back on the floor near the table where he had been eating. The body was stretched out—the head somewhat bent over to the right, the hands natural, the right open, the left not so much so; the legs were slightly separated. The revolver was about a foot from the body, the barrel pointed towards it. The mouth contained food slightly protruding from it. Upon the floor was a teacup tipped over on its side.

The Medical Examiner, the Coroner and the City Marshal were soon on the spot. The family physician was also present, and among the first to see the body. The case was decided as clearly one of suicide, and no inquest was considered necessary. It was reported that for some time the deceased had been in poor health and very despondent, and his children testified that he had threatened on more than one occasion to take his own life. He dreaded appearing in court, for which he had returned to his house from his office to make preparations. It was also stated that Mr. Burton had never fully recovered from a severe fall which occurred some months before his death.

Considering these facts no suspicion appeared to exist that the deceased had been murdered until after the funeral, when rumors were circulated that a murder instead of a suicide had been committed. Finally the community became so excited by increased suspicions that the authorities were obliged to order an inquest. The physicians seemed assured that the theory of suicide was satisfactorily proved, and although they deemed an examination unnecessary, the authorities determined to seek further light.

At the time of his death Mr. Burton's family consisted of his daughter, Maria Dorsey, and her husband, Allen W. Dorsey, and a younger daughter, Emily J. Burton, a girl of 18 years. Mr. Burton was a widower. His house was a comfortable frame building, with enough room to enable the family to live comfortably and separately. Upon the morning of his death the son-in-law was supposed to be ill in bed. The son-in-law was a student of medicine at the University of Pennsylvania, and was making the necessary arrangements to complete his studies.

Soon after the account of the suicide had been published in the papers I expressed my opinion to the effect that the statements made at the examination concerning the supposed suicide were, in my judgment, impossible. The following is the report of the autopsy as communicated to me by the Acting District Attorney: "The ball, which entered the cranium on the right side, was found imbedded in the posterior part of the left lobe of the cerebrum, and had therefore traversed the cerebrum from front to back and from right to left.

"The brain, being much softened, could not be dissected, and the track of the ball could not be followed, but it was necessarily above the base of the cerebrum, and could not have touched the cerebellum.

"Such an injury might have been eventually fatal, and although it might induce immediate loss of consciousness, would not necessarily effect that result.

"The other ball penetrated the thorax at a point three inches to the right of the left nipple and two inches to the left of the median line, on a level with the nipple. Having opened the chest, its contents were taken out and examined, and it was found that the ball had passed through the left ventricle of the heart, entering near the base and emerging at the apex, which would probably result in instant death. Afterward the ball passed between the seventh and eighth ribs, impinging on the eighth rib in a manner likely to deflect it from its direct course. The rib was taken out, and the flesh near the point at which the ball passed it was assiduously and minutely explored for an hour or more without success. As the ball was very small and the corpulence of the subject excessive, and as the finding of the ball could have no bearing on the object in view, it was concluded to be inexpedient to pursue the search further."

At the first examination Maria Dorsey, the wife, testified that the last she had seen of her father was on the night before October 5; that Mr. Burton called them all downstairs and said that he had something very important to say to them. He was despondent and said he would not be long with them; he felt badly about leaving the family, especially the younger daughter. He said he felt as if he had not long to live, probably not more than a few days at most. Mrs. Dorsey testified that she saw her father the following morning just before she went into a neighbor's "to fit on a dress;" that afterwards she went to the post-office, and then went right home again and went into the house by the front door, and thence through the dining-room to the kitchen and saw her father lying on the floor; called her sister and then ran for a neighbor, and then returned. She also testified that when she found the dead body of her father, her husband and her sister were upstairs. She left her husband sick in bed, and he did not come downstairs until after the discovery of Mr. Burton's lifeless body and her own return to the house. "We had not been to breakfast at the time of the shooting"—neither her sister nor herself were in the kitchen when the father came to breakfast. It was about 9:15 when Maria Dorsey went into Mrs. Träger's. She was not present when her father's body was taken up from the floor. Mr. Burton usually ate his meals in the kitchen; did not know whether he had finished his breakfast or not at the time of the shooting; some one led her upstairs after she had

seen her father's body. Her husband was studying to be a doctor, but had lived with her father ever since his marriage, although he paid no board either for himself or for his wife. Mr. Burton did not wish him to do so. Her father had never said a word to Mr. Dorsey or to herself about remaining at the house, and the best of feelings existed between them all.

The younger daughter testified that her father's age was 59, and that he enjoyed good health until the previous summer, when he had a fall. He seemed depressed since his fall; seldom said anything about the house. Before that he was accustomed to talk freely with them. His meals were generally prepared for him and left upon the table for him to eat at his convenience. Emily testified that on the morning of Mr. Burton's death she had eaten her breakfast alone, Mr. Dorsey being sick in bed, and her sister having gone away on an errand. As she went to her room she met her sister just starting to go out; she sat in her room reading until startled by her sister's screaming; she then ran downstairs to the kitchen—there was no one there, but her father's body was on the floor. She testified also that she saw Mr. Dorsey get out of his sick-bed. She confirmed the testimony of her sister relating to Mr. Burton's depression of spirits and to Mr. Dorsey, and also stated that Mr. Dorsey seldom met Mr. Burton, and that she never knew them to converse together. Debts and illness were the only reasons she could assign for the suicide.

Allen Dorsey testified that he was 25 years of age, that he had known Mr. Burton by sight for several years, and that he had lived with him since the 15th of June; also that he was a student of medicine at the University of Pennsylvania. That he last saw Mr. Burton six days prior to his death, and next saw him lying dead in the kitchen. The screams of his wife first announced to him the death of Mr. Burton. He was ill in bed, but arose and dressed himself, and rushed downstairs and gave the alarm. The reason he did not examine the body when he found it in the kitchen was his anxiety to procure medical help, if possible to save Mr. Burton's life. He then went upstairs to his room to comfort his wife. Dorsey described the position of the body as follows: Right arm extended; a pistol near by, barrels pointed towards the body. From appearance of the body and the pistol near the hand concluded that Mr. Burton had committed suicide. Dorsey did not know, he said, until afterwards, where the shots had lodged. Dorsey also confirmed his wife's testimony as to Mr. Burton's ill-health. He affirmed that he had offered to pay Mr. Burton board, but that it had been refused. He denied that Mr. Burton had ever spoken to him in reference to leaving the house. He also denied ever having had any trouble with Mr. Burton.

The Medical Examiner testified that he had known Benj. J. Burton previous to his death; that he was called on the morning of October 6 to see his dead body. Dr. Francis had preceded him, and they moved the body from the floor to a table; that together they made an examination, with the results already detailed. He further testified that there was not much appearance, if any, of the hair being burned by the head wound, and that the revolver used was so small that it might have been held near the head *without burning*. He also thought that the pistol must have been held very near the head for the ball to penetrate as it did.

Dr. Palmer, of Providence, with the same pistol and cartridges, proved by a series of experiments that the calibre of the pistol was large enough and the cartridges powerful enough to burn the hair beyond any distance which Burton could have held it, and that the positive inference from the unburned hair, which I had stated in the first of the examination, was that the head wound at least was not self-inflicted, and that the case was undoubtedly one of murder.

But the Examiner justified his theory of suicide by stating that at the time of Mr. Burton's death the friends of the deceased were absent, and that Dorsey and his wife said many things which convinced him that the deceased had premeditated suicide. This is precisely the attitude taken by the companions of Sergt. Rinn (about to be reported), and in my opinion should never be allowed to influence the opinion of the medical officer whose duty it is to carefully examine, weigh the evidence, make the examination, produce the bullets, and report. He considered the head wound hardly fatal, and the defense dwelt upon this question of fatality, and made their experts testify to the cases of extensive brain wounds already well known and recorded, in which the fatal termination had taken place only after a long time of comparative comfort.

The Medical Examiner stated that there was abundant evidence to prove that a man might live for years with a wound as serious as the wound which he had described. He considered that the heart wound was the second one inflicted, and then made the remarkable statement that "the wounds *could have* been *self inflicted, but that this was more possible than probable.*" The Medical Examiner exhibited the ball found in the brain, and although it came from a 22-calibre pistol, yet it had been flattened to such a remarkable degree that its passage through the brain must have caused a very considerable degree of damage, tearing and lacerating that structure to a very severe extent, and accomplishing as much harm as a smoother, rounder piece of lead, or bullet from a much larger pistol. At the inquest much of the testimony was in contradiction of that given by the children of the deceased, and it was shown that anything but a happy household existed, and that Mr Burton was strongly opposed to his son-in-law's living upon his hard-earned money; and that a decided change had been planned by which he should be able to rid himself of his son-in-law and of his daughter's support. The testimony also showed that Mrs. Dorsey's truthfulness could not be depended upon, and that Dorsey's conduct was certainly open to suspicion.

The Newport *Daily News* of Oct. 29, 1885, gives the following: "Dr. W. Thornton Parker testified: Am a physician of Newport, have heard about the case, have read the description of the wounds; had been an Acting Asst. Surgeon in the Army, and have experience in pistol-ball wounds. The very positive inference from the fact that the hair was not burned

would be that the wound was not self-inflicted. It is barely possible that the pistol used in this case could have been held by the person shot. Should say the heart wound was the first inflicted *(if suicide and not murder was the cause of death)*. If the head wound had been self-inflicted and the one first inflicted it would hardly have been *possible* for the heart wound to have been self-inflicted. (Dr. Parker produced a letter from Dr. Richardson, of Boston, a surgeon, to the effect that a self-inflicted heart wound might be followed by a head wound also self-inflicted, but if the head wound were self-inflicted loss of consciousness would follow, rendering a second shot impossible. Dr. Parker also read a report of a post-mortem examination made by him about a year ago, on Sergt. Rinn, U. S. A., at Ft. Union, New Mexico, the case being very similar in many respects to the one under consideration). Dr. Parker was of the opinion that if the head wound had been the first inflicted loss of consciousness would have followed at once, and the second wound could not have been given immediately. The heart wound was, he should say, necessarily and instantly fatal. The fact of finding food in the mouth would make the theory of suicide extremely improbable. Suicide at the time of eating would seem inconsistent. The place of entrance of the shots and the course of the bullets would add to the suspicion caused by the presence of food in the mouth—a suspicion so strong that only a *remarkable exception could account* for the theory of suicide. The point of entry of both shots in my view is foreign to the view of suicide. The wound in the head directed by a suicide would be more likely to be upward than downward; and the heart wound backward."

During the first examination of Dorsey I wrote to Dr. Richardson, of Boston, for his opinion of the case. My letter was very brief, and gave only a few reasons for my suspicions. I append Dr. Richardson's answer, and also a telegram received by me during the examination.

SOMERSET CLUB, BOSTON.

"*Dear Doctor:*— . . . . I think with you that the theory of suicide is very improbable. It is possible I think for a man to shoot himself through the heart and retain consciousness long enough to make the second attempt, but it seems very improbable indeed. If the brain is first injured I believe unconsciousness must ensue and last for quite an interval of time, *after which* of course the second shot may be fired. This seems to me quite possible and I have no doubt it has been done by desperate patients. I can recall cases in which numerous shots have been fired into different parts of the body, but do not know of any case where the brain has been *perforated* first. The man may have used two pistols firing them at the same instant; but this has of course occurred to you. I think the matter of burnt hair and clothing very important, as well as the part of the brain injured: if the medulla or its neighborhood was lacerated, it would render the firing of a second shot impossible of course. If the theory of suicide is to be established it seems to me it must be taken for granted either that the man used two pistols or that he fired the heart shot first, or that he fired the second shot sometime after the first which in that case was the head shot. . . . . .

Very sincerely yours,

M. H. RICHARDSON.

"October 21, 1885."

The theory of Dr. Richardson that a self-inflicted heart wound might be followed by a head wound also self-inflicted is correct in a very limited number of heart wounds, and under exceptional circumstances, but in the heart wound of Burton, complete perforation of left ventricle, this theory would not apply; so that looking at the matter from either standpoint the case clearly is one of murder and not suicide. So too with the soldier whose post-mortem examination I have recorded *without remarks*. As assistant I performed the autopsy, but my Surgeon decided the case to be merely suicide, while to my mind the facts very clearly suggest murder. The two severe head wounds occurring so closely together, and the shots occurring so nearly together prove to my satisfaction that Sergt. R. was shot first in the heart and after falling was then shot by his murderer twice in the head. The room was then arranged to suggest suicide, and the mirror was a superfluous addition to the preparations described. The following is the record of the autopsy referred to in first examination:

"*Record of Post Mortem Examination by Dr. W. T. Parker, 'F. A. R.,' U. S. Army, Ft. Union, New Mexico.* From Kansas City, (Mo.) *Medical Index*, Aug., 1884. Time of post-mortem 11.30 A.M., April 20, 1884, 5½ hours after discovery of the body, and presumably about six hours after death.

"*General appearances.* Body of a man about 29 years of age, well nourished, healthy appearance. Mouth partly opened from which some blood had been flowing. Eyelids partly open, particularly right one. *Rigor mortis* commencing. Upon the head, in the right parietal region, three inches above right ear, are two bullet wounds, one above the other and about an inch apart. The hair around the wound is somewhat burnt, bloody and blackened with powder, indicating close contact with the weapon used. On the thorax two inches in a straight line to the right of the left nipple is a third bullet wound. The under surface of the body is deeply stained (stasis). An incision extending from the right ear upwards across the head dividing the muscles of the scalp discovers two bullets, flattened to a remarkable extent—and imbedded in the soft parts. Parts surrounding the wounds on the head slightly swollen and infiltrated with blood. The skull is neither broken nor indented.

"*Examination of the Thorax.* Pericardium distended with semi coagulated blood. The heart weighs 10 ounces. A large bullet wound is found completely penetrating the left ventricle obliquely backwards. The left lung presents strong pleuritic adhesions. At its roots is found the third bullet, slightly scratched by contact with the rib in its passage to the heart. Right lung normal. Other viscera not examined.

"*Remarks.*—The deceased was first seen about 6 o'clock A.M., Sunday, April 20, lying on the floor face downwards. Near by was a hand mirror not broken,

supposed to have be used by the deceased in the suicidal act. A pistol of the British bull-dog pattern, containing three shells, was found close by his left hand. About an ounce of blood was found under his mouth which had escaped from the lung. His white shirt was blackened in the vicinity of the chest-wound and somewhat stained with blood. Two blood-stains from wound in head extended across the face from right angle of mouth. The body was slightly warm when found. *Rigor mortis* rapidly extending. No papers were found on the body. In the pockets of the deceased were a few nickels, a handkerchief and twelve pistol cartridges which correspond with those in the pistol which had been fired into the body. The body was fully dressed and the doors of the room unlocked."

The case was reported as one of suicide—I am not willing to affirm that it was not a case of murder. It was certainly a very suspicious case and should have received a very rigid examination.

To aid me in the difficulties of my position as medical expert for the State, and to bring together the opinions of medical men of great experience and of high professional standing, I prepared the following circular and mailed it to many who would be expected to take interest in the medico-legal questions involved :

Dear Doctor :—I desire to call your attention to the following facts, and to ask your reply to the questions, at your earliest convenience.

A middle-aged man enjoying good health and owning a comfortable home is found on the floor of his kitchen—dead.

He is supposed to have been in the act of eating his breakfast, food is found in and protruding from his mouth, so that at the moment of receiving the fatal shot *he was sitting quietly alone at his own table!* Witnesses declare that two shots followed in rapid succession—first a shot, then a heavy fall, and then a second shot. A 22 cal. pistol is found on the floor not far from the deceased, presumably placed there by the murderer to carry out the theory of suicide! Upon examination it is discovered that one bullet, probably the first, entered the cranium in the right parietal region, passing through the skull and contents and "was found embedded in the posterior part of the left lobe of the cerebrum and had therefore traversed the cerebrum from front to back and from right to left." The physicians who first examined the body found no evidence of the hair about the wound having been singed to any extent whatever.

The second shot "penetrated the thorax at a point three inches to the right of the left nipple, and two inches to the left of the median line, the ball was found to have passed through the left ventricle of the heart, entering at the base and emerging at the apex." The clothing where the bullet perforated it, is burnt, and shows unmistakable evidence of close contact with the pistol when it was fired!

Assuming that this report is correct, is the theory of suicide compatible with the facts?

It is not claimed that the brain wound was necessarily *fatal*, but would not a bullet wound penetrating the skull and traversing the brain cause an amount of unconsciousness, or at least confusion of ideas, for sixty or even one hundred seconds, sufficiently profound to prevent the suicide from immediately recocking the pistol, and discharging it into his heart?

If immediately following the first shot, the man fell heavily to the floor, and *immediately* after that the second shot was heard, does such evidence not prove *murder* instead of suicide?

Could it be possible for a man to shoot himself in the head in the manner described, and then after falling, *immediately* to successfully recock, and aim the pistol, and discharge it within two minutes from the reception of the perforating wound of the skull and brain?

Does not the fall clearly prove temporary loss of consciousness?

Considering the facts as stated, is not this very clearly and beyond doubt a *case of murder?*

Very respectfully yours,
W. THORNTON PARKER, M.D.

The following are some of the more important answers received. Some replies of value I am not permitted to publish.

Surgeon-General F. M. Gunnell, U. S. N., writes: Your circular letter has been read with interest by the Medical Officers here, who concur in the views formulated by one of them, which I enclose. The views of this officer are as follows:

1. The pistol *is not found in the hands* of the deceased, but on the floor "not far from the deceased." 2. One bullet—*probably* the first—" no evidence of the hair about the wound having been singed," etc. The pistol shot was *fired from a short distance* and *not in close proximity.* The track of the wound is "from front to back and from right to left." Now prolong this track in an imaginary line, consider not in close proximity to singe the hair and hold a pistol in the right hand and note the position of hand, wrist, elbow, and shoulder-joint and the position of the pistol in the line stated. 3. The fall occurs immediately—there is loss of consciousness and *power of coördinating movements* and this removes the probability of the wound in the thorax being first inflicted. The position of the body when found is not given. Was he found on either side or on back? for there was a wound.

" Penetrated the thorax at a point three inches to the right of the *left nipple* and two inches to the left of the median line, the ball having passed through the left ventricle *entering at the base and emerging at the apex.*" Prolong the track of this wound, place the deceased in a prone position and again place the right arm in the position of firing the pistol and note the close proximity of the muzzle to the clothing.

From the facts, it is not possible that the wound of the heart was the first inflicted. A wound of such character does not permit the element of time taken by the fall, added to the cocking and firing and motion necessary to bring the arm in position to inflict the wound of skull and brain. Suicide is not compatible with the facts as stated. The fall was from unconsciousness, and it is not possible that there was time for recovery in any degree to recock the pistol, and correlate the movements necessary to inflict the second wound in thorax and heart. The track of the wound in the heart precludes any supposition that the movements of recocking, aiming, firing and the positions necessary to inflict such would could have occurred after the wound of skull and brain. From the facts as stated the opinion is that the case was *murder.*

Dr. Thomas G. Morton, of Philadelphia, wrote: "I presume this is the same case in which I gave a written opinion some months since." He did not consider the theory of suicide compatible with the facts, and in answering all the questions sustained the theory of murder.

Dr. Bigelow, of Boston, wrote: I think the evidence leans so far towards homicide, that the onus lies with those who believe in the suicide theory to prove it.

Dr. Simon Baruch, of New York, wrote: Considering the facts as stated, this is very clearly and beyond doubt a case of murder, but there is better proof in the direction taken by the second bullet (if that is correctly stated). It is utterly impossible for a man to so apply the point of the pistol to his chest as to send a bullet from the barrel towards the apex of the heart. And it is highly probable that such a wound was inflicted by some one standing or kneeling behind the victim's left shoulder. . . . The theory of suicide is absurd. It may be claimed that by the use of both hands a pistol may be so applied to the chest as to send a ball in the direction claimed, but even this view would be rendered untenable by actual trial; the adjustment of the pistol would require great precision and steadiness of hand *and considerable time for its execution.*

The last statement of Dr. Baruch is important when we consider the facts connected with what seems to be the murder instead of suicide of Sergt. Rinn, U. S. Army.

Among those sending positive answers in favor of the murder theory were: Dr. Dolan, of the British *Provincial Medical Journal;* Dr. Proctor Thayer, of Cleveland, O.; Dr. A. B. Lyman, Baltimore, Md.; Dr. T. D. Crothers, Hartford, Conn.; Dr. Chas. B. Parker, Cleveland, O.; Prof. F. W. Draper and Dr. M. H. Richardson, Boston, Mass.; Prof. T. G. Morton, Philadelphia; Dr. Hunter McGuire, Richmond, Va.; Prof. W. L. Davis, Chicago, Ill.; Prof. Chas. B. Nancrede and Dr. John H. Packard, Philadelphia; Dr. Henry I. Raymond, U. S. Army; and a few other well known surgeons whose names cannot be made public, some connected with the U. S. Army, and some resident in New York City.

Dr. John H. Packard, of Philadelphia, besides sustaining the theory of murder, in answering the questions of the circular letter wrote as follows: In regard to the case stated in your circular received today, I think the existence of two such wounds is conclusive against the idea of suicide. The order of the wounds is not so clear. The murderer may have fired the first shot from some distance and then advanced and fired again, holding the pistol close to the front of the chest, in which case the victim would probably have been lying on his back when found. Or, firing first very close, he may have fired again at the victim's head as he was going away. Either of the wounds would, I think, have prevented the self-infliction of the other.

Dr. D. Hayes Agnew, of Philadelphia, wrote: If you will read my letter over carefully you will discover I use no such language as you credit me with saying. I have never said that the case was one of suicide or of murder, for of that I do not know. I have said, and say again, that if the conviction of the prisoner is based entirely on the fact that a man cannot shoot himself in the head and in the heart, or vice versa, with his own hand, he will be unjustly convicted. More than this I cannot say until I have heard both sides of the question. What little has been communicated to me *differs in several respects* from the statements which you have furnished. My informants may be in error, or there may be points which have been withheld from yourself.

Many surgeons and physicians in replying stated that suicide was *possible* but not probable; but many more refused to send any reply. One well known editor wrote: I invariably dodge expert questions, knowing that "things are not always what they seem." In this case they seem very much like a brutal murder, but further deponent sayeth not.

With one or two exceptions only, no letters sustaining the suicide theory were received.

The following medical gentlemen appeared for the State, and sustained me in every theory advanced in the circular letter already referred to: Prof. F. W. Draper, Boston; Prof. M. H. Richardson, Boston; Dr. McClellan, Philadelphia; and Dr. Palmer, of Providence. Prof. H. R. Storer also sustained throughout the theory of murder, and aided me greatly in the work by encouragement and advice, but declined to appear as expert. It was greatly regretted that the services of Dr. Fish, of Amherst, Mass., could not have been secured for the State.

The objectors must admit that the pistol found, or some other pistol, must have been the means of expelling the fatal bullets. Therefore, when the pistol was fired, either by the murderer or the suicide, it must have had a *position somewhere.* Then place the pistol where it could send a bullet, without the explosion from the powder burning, singeing or staining the skin, and through the skull bones and brain. Could a thick-set, clumsy man, unfamiliar with fire-arms, hold a pistol and fire it in any such position against himself as a suicide must have held it? Certainly he could not. Then consider the other shot, first or second, as one may choose; this entered the left ventricle and passed through the heart, emerging at the apex. Could such a man as already described hold the pistol to do this?

The writer is familiar with most of the cases brought forward by the defence to prove how tolerant the brain is of severe injury, notably "the case of the iron bar," as it has been termed, and which is so well known to the students of the Harvard school, and to most of those who will read this paper. As stated in my circular, "It is not claimed that the brain wound was necessarily *fatal*, but would not a bullet wound penetrating the skull and traversing the brain cause an amount of unconsciousness, or at least confusion of ideas, for sixty or even one hundred seconds, sufficiently profound to prevent the suicide from immediately recocking the pistol and discharging it into his heart?" This a large number of prominent surgeons have answered in the affirmative.

The question of the ability of a 22-calibre cartridge, when exploded, to burn hair, is settled in the affirmative by the very careful and complete experiments of Dr. Palmer, of Providence, who used the same cartridges as found in the revolver, and the identical revolver supposed to have been used in the murder. In every experiment he proved beyond a doubt that it was absolutely impossible for Burton to have held the pistol and inflicted the wounds without at the same time burning the hair and staining the surrounding tissue. This fact alone must have *proved* beyond doubt the theory of murder as

the only one tenable in view of these conditions, as conclusively testified to by the medical examiner and other competent medical witnesses. This absence of burned hair or staining was one of the first facts obtained by me in determining that it was a case of murder.

The records of the Surgeon-General's office and the experience of surgeons prove beyond a doubt that the usual result of a severe penetrating bullet-wound of the head is a certain amount of immediate unconsciousness, evidenced usually by a fall. The remarkable exceptions are not to be used as evidence to support the theory of suicide. As Prof. Bigelow has stated, the *burden* of proof rests with the advocates of the suicide theory. It is for them to prove suicide. The State should not be put on trial to defend a position so reasonable, but *the defense must prove* that the reception of a penetrating bullet-wound of the skull and contents is not necessarily followed by unconsciousness. The overwhelming evidence of the past fifty years of surgical history demonstrates to the unbiased observer that Mr. Burton could not have inflicted upon himself the wounds which destroyed his life. Such evidence cannot be gainsaid or resisted, and how it can be answered differently it is hard for me to understand.

In the case of Sergt. Rinn two shots were fired at the head, entering the scalp within two inches of each other. Is it probable that a suicide would select two places so near together? The bullets which struck Sergt. Rinn's head were large and came from a powerful British bull-dog pistol. These bullets must have struck the head with terrific violence, since when discovered by the knife at the post-mortem they were found to be flattened to a remarkable extent. Is it reasonable to suppose that after two such staggering blows this man could shoot himself in the heart? Was not the placing of the hand mirror a mere subterfuge to suggest suicide and hide the murderer?

It was claimed by the defense that suicides very commonly select the head as a target for the suicidal shot. However much truth there may be in this statement, it must be equally true that when such a wound is inflicted powder stains or burning must necessarily follow; but the main objection to the argument in connection with the Burton case is, that *immediately* after accomplishing this penetrating pistol-ball wound of the brain the supposed suicide was able to accurately place, hold in position and discharge for the second time the pistol sending the ball into the heart. This is, in all human reason, an impossibility, and not *one case* can be brought forward to illustrate this extraordinary theory. The defense asks us to believe too much, forgetting that the burden of proof rests with them and *not* with the State. But when within a few moments of the murder it was discovered by at least one competent surgeon that no burning of the hair or staining of the flesh had taken place, and at the same time, if a case of *suicide*, the pistol was obtainable for inspection, then the suspicion of murder should have increased to such an extent as to lead to the immediate decision of a premeditated homicide, and should have demanded immediate action by the police authorities.

The question of the amount of *time* after the receipt of a wound in the brain, before unconsciousness would ensue, has provoked very much discussion. It seems to me that in ninety-nine cases in a hundred there is more or less immediate shock, varying all the way from slight bewilderment and loss of reasoning to absolute loss of sense. This is one of the most important questions connected with the case, and the plea of "possibility" is the plea only of *possible exception*, which in point of fact only proves the rule.

Considering the facts as stated, is not this very clearly and beyond doubt theoretically a *case of murder?* Practically it terminated as follows: Maria Dorsey, the elder daughter, completely broke down upon the evening following the expert testimony for the State. To a friend she said that the testimony of the five medical experts was more than she could endure, and so gave up a full confession. The senior counsel abandoned the case, the jury soon brought in a verdict of guilty for both Maria and her husband, Allen W. Dorsey, and they were promptly sentenced to State's Prison for life, the extreme penalty in Rhode Island. To complete the case, Dorsey himself confessed his awful crime, and so the famous case ended.

A CASE OF EPILEPSY APPARENTLY CURED BY CORRECTION OF HYPERMETROPIA AND RELIEF OF CILIARY SPASMS.

Read in the Section on Ophthalmology, Otology and Laryngology, at the Thirty-Eighth Annual Meeting of the American Meaical Association, June, 1887.

BY G. E. FROTHINGHAM, M.D.,

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I am led to report the following case not for the purpose of advocating any theory, but by a sense of duty to record a fact that may add to the statistical data to which appeal must be made in settling the question as to how important a part, eye-strain plays in the etiology of nervous affections. This subject has been a mooted one for several years, by some condemned as of little importance, but by its originators and supporters pressed as one of the most important factors in the production of various nervous diseases, even as frequent cause in the production and maintenance of epilepsy and insanity, the most exalted manifestations of nervous disturbance, and the least curable by medication. Believing, with Hoffman, that there is no escape from the labyrinth of doubt created by controversy, except by carefully and diligently consulting the records of cases, I have concluded to contribute this mite to the great whole by which we can only settle this question. As it has been now more than three years since the last manifestation of disease, we may claim that the cure is permanent, whether or not it is due to the means that apparently effected it or not. The following is a brief account of the case:

An April 22, 1884, I was consulted by Miss E. J. L., aged 24, daughter of Rev. V. L. L., then residing in Ann Arbor, Mich. She came to consult me con-

cerning epileptic spasms with which she was afflicted, and also about some visual disturbances that had always given her trouble. Her father, who accompanied her, gave the following history of the case. She was an unusually healthy child until her eleventh year, when she was very suddenly attacked with a convulsion lasting about five minutes, after which she lay in a deep sleep for between one and two hours, from which she awoke apparently all right. The family physician thought the attack due to intestinal worms, and gave some remedies based upon this view. In about a month another spasm of the same kind occurred, and for sometime thereafter, they occurred monthly, or varying not more than one or two days from that period. This regularity in occurrence led the physician to believe that possibly it was a case of premature menses, and that some obstructions to the escape of the discharge caused the irritation that produced the spasms, which were all of an epileptic character. The limbs were drawn up, head bent backward, the teeth firmly set, the tongue often bitten, until, after awhile, the premonitory symptoms being recognized, a cork was inserted between the teeth and the injury to the tongue thus prevented. There was frothing at the mouth and general convulsive movements. The spasms were not preceded by an outcry, but in every instance there was, just before the convulsions, dizziness, color seeing and flickering before the eyes. If these symptoms continued more than a few minutes a spasm occurred. These symptoms occasionally appeared for a minute or so at a time without being followed by the epileptic spasms, but they always preceded the spasms, and a persistent attack of this kind was the means by which the patient was able to foretell a convulsion.

When the patient was about twelve years of age Dr. Lewis A. Sayre, of New York, was consulted. He examined the patient carefully, and concluded, that the spasms were due to some gastric derangement, or to some pre-catamenial derangement of the nervous system, and that they would probably disappear after a sufficient lapse of time. Bromide of potassium was prescribed and, after awhile, Brown-Séquard's method of treatment was adopted and faithfully carried out. The spasms could be controlled for a time, but, in a few months would return as before, and all remedies became ineffectual. After the brief respites afforded by remedies, the convulsions would recur with more violence than before. The bromides of potassium and sodiums were used until the nervous system became much depressed and the health and strength greatly impaired. The patient was not only weak and languid, but became greatly reduced in flesh.

When fourteen years of age Dr. Wm. A. Hammond was consulted, and after a critical examination, including an ophthalmoscopic examination, concluded that the trouble was due to congestion, or other disease, of the base of the brain. He gave an unfavorable prognosis, but recommended the use of nitrate of silver, which the parents objected to and it was never given.

From the age of fifteen to eighteen, the patient was under the care of Dr. A. L. Turner, of Bloomsburg, Pa., who was able, by his remedies, to keep the spasms off longer than had been accomplished by any previous method, but did not effect a cure, while the bromides used by him, as a part of his treatment caused much depression and enfeeblement. She next came under the care of Dr. E. L. Dunster, of Ann Arbor, Mich., who omitted, for awhile, the depressing medicines and gave tonics. The spasms were even less frequent than before but still continued up to the time she consulted me, April 24, 1884. She was at that time spare and anæmic, with an anxious troubled expression of the countenance, and had the appearance of being older than she really was. The menses were regular and the convulsions seemed to have no connection with this function. There were occasional headaches, and symptoms of asthenopia, though not very severe. An examination of the eyes showed the vision of each eye normal ($\frac{20}{20}$) and manifest hypermetropia varying from 0.50 to 0.75 D. in both eyes alike. There was no insufficiency of either the external or internal recti, or any abnormal relation existing between the external muscles that could be detected. An ophthalmoscopic examination showed a normal condition of each fundus, but a total H. much greater than shown by the subjective test. The patient accepted a + 1.50 D. S. for each eye in reading, and experienced a feeling of relief and comfort in using them.

April 26, the accommodation was paralyzed and a total hypermetropia of 2 D. was found to exist in each eye. The corresponding glasses were prescribed, the atropine continued, with directions to omit it after two weeks, and after another two weeks to gradually resume the use of the eyes by Dyer's method. The period of rest was, however, inadequate, for on June 9 the patient returned and I found the manifest hypermetropia varying between 0.75 D. and 2 D., which latter was the total amount. There had been no return of the epileptic convulsions since the first examination, and the patient was feeling some better. I directed a more prolonged use of the atropia, reduced the strength of the glasses to + 1.50 D. and directed a return to the use of atropia whenever these should blur distant vision. I also gave the usual directions for easy use of eyes.

I did not see the patient again as she went East, and I did not hear anything more of the case until Nov. 26, 1886, when the father wrote me from Bloomfield, N. J., his present home, as follows: "I am prompted to write you a few lines about our daughter Emily, which I thought might be of some interest to you professionally. You will recall that for years she was troubled with spasms, preceded by color seeing, flickerings and dizziness. We tried many physicians both East and West, among them were Dr. Lewis A. Sayre, and Dr. Wm. A. Hammond, of New York. The relief was only partial and temporary, meantime by the use of bromide of potassium, and like sedatives and antispasmodics, she was constantly feeble. Dr. Dunster prescribed for her as well as yourself, but you said that some claimed that these troubles originated in, or were continued and aggravated by certain abnormal conditions of

the eyes, and you made an examination and advised the immediate and constant use of glasses, and a discontinuance of the bromides of potassium, sodium, etc. Well, before we left Ann Arbor, a marked improvement was observed—strength returned, she gained in flesh, and was in every way better, and now, during some two and a half years, she has never had a spasm, the color seeing is *very* seldom, and she is so fleshy and well you would hardly know her. She has taken no medicine in two years. Now I am inclined to think the glasses were the remedy, and I thought it might confirm your judgment in such cases, and be gratifying professionally, to know the result."

On Feb. 12, 1887, in answer to some inquiries, I heard from this patient, and the improvement had still continued as at the date of the letter above quoted. Considering this lapse of time, we are justified in regarding this case as apparently cured, and from the history it would seem that the cure was effected by the correction of an existing hypermetropia. I have not been investigating in this direction, and had it not been for the thoughtfulness of the father of this patient I should never have known the result.

It is several years since the attention of the profession was called to the connection which some claimed to exist between errors of refraction and nervous diseases, such as chorea, epilepsy, etc. The views promulgated by some of the early writers on the subject were generally rejected as extreme, and this has been my own view in regard to them. The possibility that they may have been *too lightly* estimated, is sufficient excuse for continued agitation of the subject, and for the collection of *every* fact that may tend to aid in its investigation and settlement.

On March 1 of the present year Dr. Geo. T. Stevens read, before the New York Neurological Society, a paper entitled "Irritation Arising from the Visual Apparatus Considered as Elements in the Genesis of Neuroses." He reported a series of most remarkable cases, in which the correction of slight errors of refraction, or the relief of insufficiency of some of the recti muscles, had caused immediate improvement in patients demented by epilepsy, which had resulted, as he believed, from the eye strain. He cites cases of insane patients at the Willard Asylum, who were considered incurable, that were apparently benefited by this method of treatment. Fourteen patients were treated by him. Ten of these were insane and demented epileptics. These patients were found to be suffering from insufficiency of one or the other of the recti muscles, and were operated on by him for its relief. During the month preceding the operations these patients, collectively, had 170 convulsions. During the month following the operations these patients, collectively, had only about 40 attacks, and this, notwithstanding the withholding of bromides. Such facts should at least command attention, and did receive due consideration by the distinguished gentlemen present. None of those who participated in the discussion, except one, could cite personal experience corresponding with that quoted by the author of the paper, and many were inclined to combat the extreme views advocated therein. All agreed, however, that a complete examination of the eyes, including their refraction and the condition of the external muscles, should be made in all nervous affections.

Dr. Stevens declared in his paper that, as a result of an analysis of over 5,000 cases of nervous diseases occurring in his private practice, besides a considerable number in public institutions, he had come to the conclusion that "difficulties attending the function of accommodation, and of adjusting the eyes in the act of vision, or irritation arising from the nerves involved in these processes, are among the most prolific sources of nervous disturbances, and, more frequently than other conditions, constitute a neuropathic tendency." Granting that his experience is exceptional, and his views extreme, may there not be more in this theory than is generally believed, even by oculists. Neurotic patients generally come under the care of those who give their attention to general practice, or who confine their practice to nervous diseases, and by them the condition of refraction and the relation of the external muscles are often too lightly investigated. By many it seems to be ignored, and the paper of Dr. Stevens, above referred to, has been characterized editorially in a leading journal as a "narrow specialism;" and not long since, when a case was reported in one of the medical societies of some nervous disease cured by properly fitted spectacles, the editor of the journal containing the report volunteered the remark that "no well educated physician of the present day would make such a claim."

Peripheral irritation, as from tapeworm, etc., has long been recognized as a cause of epilepsy, but it has generally been held that when the *status epilepticus* has once become established by any of these peripheral causes, the removal of the cause does not cure the malady. Numerous cases can, however, be found in modern medical literature that tend to discredit this view. Epilepsy has been observed to disappear after the removal of various sources of eccentric irritation, such as the removal of a diseased knee-joint;[1] the relief of preputial irritation;[2] the restoration of a prolapsed rectum;[3] the restoration of a retroverted uterus;[4] the removal of carious teeth;[5] and by the enucleation of a diseased eye.[6] We can hardly consider these cures of epilepsy, which had existed for ten years in some of these cases, as the mere result of the traumatism inflicted by the operative procedure, as was suggested by Dr. Seguin in discussing Dr. Stevens's paper,[7] but it must be regarded as due to the removal of a source of eccentric irritation, which in some cases is the exciting cause of the epileptic spasms. This peripheral irritation may exist in any part of the body, but we can readily conceive that excitement, strain or irritation

[1] Med. and Surg. Reporter, 1883, No. 48, p. 26.
[2] Mississippi Valley Medical Monthly, 1883, vol. iii, p. 120. Also see case, Phila. Med. Times, February 19, 1887, p. 342.
[3] Medical Record, March 22, 1884; from London Med. Record, January 15, 1883.
[4] Medical Record, September 3, 1881, p. 22.
[5] Am. Jour. Med. Sciences, January, 1870.
[6] Medical Record, vol. xx, p 722; from Chicago Medical Examiner.
[7] New York Med. Journal, April 16, 1887, p. 443.

in *some parts* may more readily produce these derangements than excitement or irritation in some other portions of the body, just as excitement or irritation of the parts supplied by the glosso-pharyngeal nerve more readily excites the vomiting centre than irritation in other parts, though several portions of the body seem quite intimately connected with this centre. Has the eye a similar connection with the coördinating and motor centres? and is eye strain, as claimed by some, "among the most prolific sources of nervous disturbance, and, more frequently than other conditions, constitute a neuropathic tendency?"[8] This is a question worthy of investigation and answer.

Dr. Chas. A. Oliver recently published an analysis of the ocular symptoms obtainable in epilepsy in the male adult.[9] He based his conclusions upon the examinations of fifty male adults, of American stock, inmates of the State Hospital for Insane at Norristown, Pennsylvania. All were epileptics. In his ninth conclusion he says: "The presence of insufficiency of the interni in the majority of cases is readily explained by association with existing H + Ah, and probably has no relation with the epileptic condition." In the light of the report made by Dr. Wise, of the Willard Asylum, to Dr. Stevens, as to the apparent benefit following his operations in similar cases, are we prepared to accept Dr. Oliver's conclusion, above quoted, without further investigation?

Ferrier, in the second edition of his great work on "The Functions of the Brain," issued last year, discards his former view, which located the visual centre in the angular gyrus, and he now locates it in the occipito-angular region. He declares that, though the cerebellum is not essential to sight, it has intimate relation not only with the optic, but also with the oculo-motor nerves, as is shown by the importance of visual impressions on the mechanism of equilibration, and by the relation between oculo-motor and general motor adjustments, demonstrated by experiments. The superior cerebellar peduncle is suggested as the probable medium of communication of optical impressions with the centres of equilibration.[10]

The hope that the report of the above case might excite some discussion, and lead to the relation of experience and expression of the views entertained on this subject by the members of the Society, is the excuse for its presentation here.

CONSERVATIVE DENTISTRY.

Read in the Section on Dental and Oral Surgery, at the Thirty-Eighth Annual Meeting of the American Medical Association, June, 1887,

BY A. E. BALDWIN, M.D., D.D.S.,

OF CHICAGO, ILL.

I have chosen for the subject of my brief paper "Conservative" or "Preservative Dentistry," and my only apology for presenting such a paper as this, is the hope that it may draw out some discussion, and do something toward clearing the minds of many general practitioners of medicine from fallacies, inherent from a lack of a proper appreciation of this subject and a prejudice which many of them must have obtained from the constant rantings and railings about the lamentable ignorance of the Doctor of Medicine, by some of the would-be lights of the dental specialty. I will be excused in the light of the above in making this paper deal largely in generalities; thinking by thus doing that the mind of the general practitioner may enlarge upon these generalities, and through them we may hope to enlighten the laity, who are, as a rule, willing to do anything which their physician recommends or which they can believe is for their good, especially in regard to their physical condition.

I think I am not stating it in too strong language when I say, that if there is one factor more than another that brings the people to the physician it is the troubles arising from indigestion. It assumes a variety of forms, and is almost always largely owing to the condition of the teeth.

This matter is fully as important in the child as in the adult (and to my mind much more so). Take the child, for instance, from four to twelve years of age, growing rapidly; the amount of nutrition furnished must be largely in excess of that necessary (in proportion to size) for the adult, for they have not only to assimilate a sufficient quantity to make up for the waste, but also for the great development and growth in, and of the tissues. How often do we see the child with decayed teeth, nearly or quite exposed or dead pulps, and these unattended to, makes him very careful of masticating food: the consequence is the food is imperfectly commingled with the saliva, and goes into the stomach in a solid instead of a pulverized condition; the stomach is overworked, the system is underfed, and these things tend to develop a nervous, hypersensative condition of the organisms of the body, and especially of the nervous system, and we see them illy nourished, thin, nervous and weak, and with that worst of all habits formed for life, of never using the teeth save to get the food in a condition to be swallowed. And then oftentimes when the child's tooth gives him a little trouble, the parent takes him to the family physician who extracts the abused tooth and thus paves the way for irregularities of the permanent teeth, instead of explaining what is necessary, *i. e.*, to take him to the family dentist and have the tooth or teeth put in good repair, to require at least semi-annual visits that they may be kept in such a condition that mastication can be performed painlessly, and the space occupied by the temporary teeth maintained until the eruption of the permanent tooth to take its place—for should it be extracted, it is a well-known fact that the remaining teeth tend to close the space occupied by the tooth, and thus the permanent tooth must be erupted in an abnormal position. Should the above be carefully followed, I think much of the decay and suffering from the teeth later in life would be obviated, and the system kept better nourished, the stomach not overworked and the general condition much improved.

[8] Geo. T. Stevens, M.D. N. Y. Med. Jour, April 16, 1887, p. 422.
[9] See Philadelphia Med. Times, February 5, 1887, p. 306.
[10] Ophthalmic Review, April, 1887, p. 124.

And what I hold to be true of children is in a large sense true of adults, and I know there are many general practitioners who are as thoughtless of the outcome, in the matter of the teeth, as I was when in the general practice, often then extracting or advising the extraction of a tooth when by so doing I was doing the patient an incalculable amount of harm. While I do not mean to be understood as advocating the doing away of the forceps entirely, yet I think a rule might be formulated something like this—"No tooth or good root of a tooth should ever be extracted if it is in a position where if sound, it would be serviceable." Of course, this is not an invariable rule but the exceptions would hardly be noticeable.

Many of you may recall the acrimonious discussion in and out of the *Medical Record* of a short time ago in regard to leaving in the mouth of pulpless teeth, especially after an abscess had formed at the root. But I think a quiet examination of the subject will develop the fact that if the inside of the tooth, *i. e.* the pulp chamber and the canals, are thoroughly desiccated and then filled with an indestructible and non-irritating material that the tooth remains as inoffensive to the tissues near to and far removed as though it were perfect as nature formed it.

Oftentimes, in medicine as in other things, guess work or tradition compels innocent things to be pronounced guilty, and I think the cases are very rare where trouble in other tissues may be traced even indirectly to a well treated pulpless tooth. I know I am taking grounds that may be criticised by some, but when reflected upon I think they will be very generally accepted.

Now, in regard to the tooth and the surrounding tissues, or connections with other organs. These connections are of nerve tissue and the circulation by which the pathological condition can be communicated, and in the devitalized or pulpless tooth the troubles are caused, as I suppose, by the putrefaction of the confined tissues with the formation of irritative gaseous products, and these being compelled to escape, must escape at the apical foramen of the root, and this causes irritation of the peridental membrane and inflammation, exudation and suppuration following from what is known as an abscessed tooth. Many physicians and, I am sorry to say, very many dentists too, here think the proper treatment is to extract, but I, in common with most of the dental specialists, hold as according to the teaching of Prof. Allen, of Rush Medical College: "Having found what was the matter and the cause, remove the cause,"—not the tooth, for that was not the cause, the cause being the irritation induced by the confined gases; give these gases an opportunity to escape by freely opening into the pulp chamber, remove as thoroughly as possible the putrefying débris, dry or dessicate the pulp chamber and root canals. I think, as a rule, disinfection is not necessary, as the thorough drying is a perfect disinfection, and then having accomplished this, to fill the root canals with a material that is of itself non-irritating and not affected by any of the fluids of the system, and the material *par excellence* is a thick solution of base-plate gutta-percha dissolved in chloroform. This, pumped into the root canals and forced to the apical foramina, entirely removes the cause for any further irritation. Many dentists, I know, claim this can be accomplished better by other means, but I am confident the majority of cases of failure of this treatment is in not having the canals thoroughly dried, and as this material shrinks in drying, if the walls are not thoroughly dried, the shrinkage is *from* the walls, allows infiltration of fluids into the canals, and an undesirable result follows.

I am willing to affirm, that a tooth with canals *thoroughly* dried and filled with the solution of gutta-percha in chloroform will never again give trouble from irritation, save from some external condition of tooth which, may or may not exist entirely independent of the fact as to whether the tooth has a living or dead pulp.

And to illustrate the external causes which may act, I mention a case that came to me some eighteen months ago, with the request to examine a tooth which had troubled him for years and had been treated by some of the most skilful dentists in the West with no relief. After a careful examination I told him I could do nothing of benefit to him save to extract the tooth. In spite of the much-vaunted ability of some men to relieve all such cases, I think this was clearly a case where relief could only be obtained by the removal of the tooth, a lower left first molar. The anterior root being entirely encrusted with a thick deposit of tartar, this extended all about the root, clear over the apical foramen of the root and up between the roots to the top of the arch, and partially down the other root on the inside. Now, why was not this condition recognized and treated properly a long time before, at a great saving of time and money to the patient? I can conceive of only one reason, and that was, the mind of the dentist was so bent on demonstrating a theory that the interest of the patient was not thought of.

Some of us are so taken up with seeking myths from and in materia medica that they are imposing many ridiculous things on us, giving us more chaff than wheat, forgetting that first a thorough, unbiased examination and clear demonstration of its value, should precede the foisting of it upon the profession; and while for a few years, perhaps, we should be denied the infliction of so many voluminous papers of trash on dental materia medica, yet progress would be safer and more sure. And another prominent dentist is constantly pressing on the profession theories, many of which have been exploded years ago by the medical profession as of no value, and nearly (if not quite) all are simply theories, with no clear demonstration of the facts as applied to our work. I think the greatest of the faults in the dental ranks is that we do not do enough original thinking; we are too apt to let one doctor or another do the thinking for us, and do not depend enough upon ourselves—if we did we should not be so ready to receive and embrace false doctrines. As it is now, if any question comes up, the mass of the profession first want to learn what Dr. So-and-So thinks, not stopping to con his reasons (if he has any) for his ideas, and at once adopts them as his own.

As an illustration of the way we should do, I have only to refer to the story of the young artist who, meeting the old and celebrated artist, inquired of him how he mixed his paints to produce the harmonious blending of colors in his pictures, and was astonished at the (clear) reply of the artist: "I mix them with brains." Could we get this little truth established in our minds, and ere we do anything, use our brains as to the cause and the remedy, we should soon be more in a condition of scientific progress and have many less theories.

It is much easier for us to see faults in our brother, the general practitioner, than to see the much greater faults in ourselves, and if we can get the general practitioner to simply apply the same rules in his reasonings in regard to the dental tissues as in those that he is oftener called to treat, and to recognize that the abscessed or pulpless tooth is *not* a dead tooth at all, but simply one that by proper treatment can be made a good and serviceable instrument for mastication, the writer of this paper will be gratified beyond measure.

MEDICAL PROGRESS.

Metrorrhagia at the Time of Puberty.—In an article on this subject Dr. Henry C. Coe says:

As regards the treatment, I can only add that it should be largely expectant, since the hæmorrhage tends to cease spontaneously. Absolute rest in the recumbent posture, with the avoidance of all disturbing influences, is generally sufficient. The patient ought not to be allowed to get out of bed for the purpose of emptying the bladder or bowel; neither should be permitted to become distended, since this tends to increase the hæmorrhage. On the other hand, violent purgation is equally to be avoided, since it augments the pelvic congestion.

As regards drugs, the fluid extract of *Hydrastis canadensis* has been highly recommended in uterine hæmorrhage, but it did not seem to act so well in this case as ergot. I have not met with such good results from the use of aromatic sulphuric acid as others. Since the hæmorrhage in these cases is an expression of the general pelvic congestion, it is a question if, by endeavoring to promote uterine contractions, and hence local anæmia, we do increase the existing hyperæmia in the pelvic vessels. The conditions in the case of a virgin and in that of a multiparous uterus are manifestly different.

As regards the application of cold to the abdomen, as recommended by German writers, it is to be noted that this agent should not be employed indiscriminately. I should not have ventured to use it in this instance if I had not been sure that the hæmorrhage was not the true menstrual flow. Even then the ice-bag was left *in situ* for only half an hour at a time. Its use in such a young patient during the period might be productive of harm, by modifying unnaturally the normal hyperæmic condition of the pelvic organs, just as sometimes occurs in consequence of a cold bath at that time.

Vaginal injections are always extremely distasteful to a young girl, and, in consequence of the anatomical condition of the parts, they cannot be given thoroughly. If employed at all, they should be administered slowly, and should be non-irritating. The amount of water and the force of the stream must necessarily be smaller than would be used in the case of a multipara. A simple astringent, such as alum, is preferable. It is a question if they accomplished much good in the case described; they were, at least, not productive of harm.

To summarize: Metrorrhagia at the time of puberty is not necessarily pathological, and rarely calls for local treatment. If dysmenorrhœa is absent, if no general cause can be discovered, and the patient is not profoundly affected by the loss of blood, the chances are that the condition is temporary, and that it will cease when she is placed under proper hygienic conditions, which conditions can only be determined by experiment. Treatment should be mainly expectant, while vaginal examinations are rarely necessary.—*N. Y. Medical Journal*, August 27, 1887.

The Cerebro-Spinal Fluid.—Falkenheim and Naunyn agree with Bergmann in regarding the cerebro-spinal liquid as a true secretion from the plexus choroidens and not a simple transudation. The normal subarachnoidal pressure is from 7.5 to 12 mm. of mercury in a strong dog. The amount of fluid secreted varies much in different dogs, from 1 ccm. in 6 minutes to 1 in 40 minutes. The secretion is not dependent on the blood pressure nor on the size of the animal, although the resorption of the fluid is. An increase in the pressure of the cerebro-spinal fluid may result from an increase of the arterial or venous blood pressure, since the resorption of the fluid cannot compensate for the effect of raised blood pressure.

The authors believe that under circumstances of disease an increase of subarachnoidal pressure leads to symptoms of pressure on the brain only through anæmia of the brain; is the result only of overcoming the usual blood pressure in the brain-vessels. They believe that symptoms of such pressure arise only under very peculiar circumstances when due to an increased secretion of fluid, but that they arise readily from disturbance of resorption. The pressure necessary to produce symptoms is not a constant one, but depends upon the pressure within the vessels of the brain.—*Centralbl. für klin Med.*, No. 33, 1887.

Nitroglycerine in Nephritis and Uræmia.—Dr. S. A. Lentovsky, of the Cronstadt Marine Hospital, employed nitroglycerine (in tabloids containing each 1-100th of a grain of the drug) and hot water baths in four cases, three of which are given with minute details. In two of the patients the daily amount of urine rapidly increased, while albuminuria and dropsy disappeared and the patient's subjective feeling and general state strikingly improved. In a third case the improvement was but fleeting, the patient dying after a short stay at the hospital. The

post-mortem examination showed that he had not suffered from nephritis, but from an extensive amyloid degeneration of the kidneys and spleen. The remaining case illustrates the beneficial action of nitroglycerine on uræmic symptoms. The patient, a girl of 15, was brought in an almost unconscious state, with general convulsions, frequent vomiting (the ejected matter smelling of urine), extensive dropsy, stertorous frequent breathing, and small pulse. Nitroglycerine and hot baths having been at once ordered, on the next day the girl was able to sit up in her bed, ate with appetite, and generally felt comparatively well.—*London Medical Record*, Aug. 15, 1887.

HEADACHE FROM ERRORS OF REFRACTION.—In a paper read before the Liverpool Medical Association MR. T. H. BICKERTON says: When one sees, as I have, headache from the simplest to the more intense, headache intermittent or constant, in some cases associated with indigestion, biliousness and vomiting, in some with giddiness and faintness, and in others with languor, sleeplessness, and general debility; when one sees not only the headache but all its varied concomitants vanish by the means of accurately fitted glasses—then I say it is impossible to come to any other conclusion than that errors of the refractive media of the eye are answerable for a large number of our every-day headaches, a number quite unsuspected by the profession at large. And in saying this I would wish most particularly not to be misunderstood. I do not for one moment suppose that all headaches are due to ocular trouble—far from it; but I do believe that a very large minority are due to this cause. In one respect I labor under the disadvantage of not seeing general practice, and therefore have not the opportunity of seeing the many varied conditions of health which lead to headache irrespective of a definite cause. I therefore ask to be forgiven if I appear inclined to overrate the importance of the specialty at which I am engaged, and I have the satisfaction of knowing that there are many practitioners who have a vast experience of headache, and that they will be able to bear me out in my conclusions, or, on the other hand, to correct me.—*Lancet*, August 13, 1887.

TREATMENT OF RUPTURED AND DIVIDED TENDONS.—DR. C. H. WILKIN presents a table of 32 hitherto unpublished cases, of which 28 were treated by suture, with good results in 22 and benefit in all. He considers the injury in two classes, simple and compound. While in the former almost all authorities seem to agree that rest and position are sufficient, yet it would seem that a better result and certainly closer apposition could be obtained by the use of the suture; of the propriety of the suture in the compound variety, there can be no question. The plan of treatment recommended, is first thorough cleansing of the part and irrigation of the sheath of the tendon with a 1–1,000 bichloride solution—except when the knee joint is involved, when it should be 1–5,000—by means of a small English catheter with a syringe attached, cocaine anæsthetics, and the use of silk-worm gut suture, two sutures being necessary in the average tendon, one being carried transversely through the tendon and the other antero posteriorly. —*Medical Record*, April 2, 1887.

PRODUCTION OF ACID IN THE STOMACH.—In order to find an explanation of the relation of the nervous system to the functions of the stomach, VON NORDEN investigated the digestion in 14 cases of melancholia, in which it could be shown that there was no organic disease of the stomach. He found that the total acidity of the stomach reached a percentage only exceptionally attained in health—.28—.4 per cent. The hyperacidity, which is due almost entirely to the existence of hydrochloric acid, causes a very quick and complete digestion of meat in the stomach, while starchy articles are but little changed. After a hearty meal composed of a mixed diet the stomach was rapidly emptied; in from 3½ to 4 hours completely. Except during the period of digestion no gastric juice is secreted. No perceptible discomfort, such as heartburn, resulted from the hyperacidity. The increased secretion of HCl Norden considers conditioned by the influence of the nervous system, and that it is therefore a true secretory neurosis.—*Centralbl. für klin. Med.*, No. 33, 1887.

COCAINE INTERNALLY.—DR. L. FREV, of Bêkés, having as a patient a young woman who had mitral insufficiency and hypertrophy of the heart associated with hyperæsthesia of different parts of the body, which caused extreme irritability of the stomach and constant vomiting, so that for some days she had scarcely twenty minutes' intermission, tried digitalis, opiates, ice, cold applications, etc., but without any effect. He then determined to try cocaine internally. He gave three-quarters of a grain dissolved in water, which was followed by a cessation of the attacks of vomiting for two hours; another dose gave the patient six hours' rest, after which a violent attack of vomiting came on. The third dose stopped the vomiting altogether, after which all the other symptoms from which the patient suffered rapidly improved.—*The Lancet*, August 6, 1887.

EFFECT OF CARBOLIC ACID ON TEMPERATURE.—DR. H. A. HARE draws the following conclusions from a number of experiments:

1. Carbolic acid possesses considerable power in lowering normal bodily temperature.

2. It possesses more influence over pyretic temperature than does salicylic acid, generally preventing a rise or causing a fall of temperature, but sometimes failing to do so.

3. Carbolic acid probably decreases arterial pressure when lowering temperature.

4. That its mode of decreasing normal bodily temperature is as yet not fully understood, although it would seem probable that it acts on both heat functions.

5. When influencing bodily heat in fever it acts chiefly by decreasing production, although it affects both functions.—*Therapeutic Gazette*, Aug. 15, 1887.

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THE EDITOR OF THIS JOURNAL would be glad to receive any items of general interest in regard to local events, or matters that it is desirable to call to the attention of the profession. Letters written for publication or containing items of information should be accompanied by the writer's full name and address, although not necessarily to be published. All communications in regard to editorial work should be addressed to the Editor.

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SATURDAY, SEPTEMBER 3, 1887.

NEW YORK CITY BOARD OF HEALTH.

Under the *régime* of the new President of the New York City Board of Health, Mr. Bayless, as was to have been expected from his recognized ability as a sanitary expert and his well-known public spirit, the Health Department has been placed in a more efficient condition than has been the case for some years previous. The Board has been partially reörganized by a consolidation of its various divisions, and a number of important improvements, in which Mr. Bayless has had the coöperation of the able new Commissioner, Dr. Bryant, have been inaugurated in the work and administration of the department.

Among these is the method of dealing with contagious diseases other than small-pox and typhus fever. The large mortality which has prevailed in the city for a considerable period past from scarlet fever, diphtheria and measles has induced the health authorities to announce that in future all cases of contagious diseases in which the patient cannot be properly isolated at home shall be promptly removed to the hospital; this rule having heretofore been enforced only in cases of typhus and small-pox. Such patients are taken to the Willard Parker Hospital, and several new pavilions have been fitted up at North Brother Island for the accommodation of convalescents. By removing the latter, ample room can be made at the Willard Parker and reception hospitals for new patients. As soon as this plan of action was adopted a committee of prominent physicians in the city, unconnected with the Board of Health, were invited to make an inspection of the various hospitals and report upon their condition; at the same time suggesting any improvements in their construction or administration that might seem to them advisable. In order to further restrict the spread of these affections the Board have begun a strict enforcement of the Sanitary Code requiring that all persons dying of any contagious diseases shall be buried within twenty-four hours, and that all funerals of such shall be private. Where these rules are disregarded legal proceedings are at once taken both against the families at fault and the undertaker officiating at the funeral.

Another very important work that the Board has undertaken is the prevention, as far as possible, of over-crowding among the tenement-house population; which would seem to be a pretty difficult matter in a city like New York. A recent writer in the *Forum* thus describes a single block, 200 by 700 feet, in a tenement-house district: "On all four sides are rows of tenements four or five stories high. Behind one-third of the houses in these rows are rear houses, with smaller rooms, darker and dirtier passages, backed by another rear house, a brewery, a stable, or a factory. Altogether there are 1,736 rooms. In these rooms live 2,076 persons, divided into 460 families; thus, on the average, each family of five persons occupies three rooms." In some parts of the city the population is equivalent to 290,000 to the square mile; while the most densely populated part of London, proverbial for its misery and wretchedness, has 170,000. Cases have been known in this typical block in which 14 or 15 grown persons occupy two rooms, or even one. Many of the rooms, too, are nothing more than dark closets. About all the bedrooms in fact, measure but 7 by 9 feet, with one door leading into an apartment that serves a kitchen, parlor, dining-room, sitting-room, laundry and workshop, and one window that opens on a dark stairway, up which moisture from the cellar and sewer gas from the drains are constantly likely to rise. Under such conditions disease is a frequent visitant and death an incident so common that it ceases to be impressive. "The corpse," says the writer in the *Forum*, "lies for two days in the room where the family eats, works, and often sleeps."

The Board of Health has issued orders to its inspectors to report all cases in which (1) the overcrowding is due to boarders taken in, not members of a family; (2) in which there are not 400 cubic feet of air for each adult and 200 feet for each child under the age of puberty, and (3) where the ventilation is insufficient. Recently quite a number of tenement houses have been ordered to be vacated as being entirely unfit for human habitation, and in a recent letter addressed to President Bayless, Mayor

Hewitt says: "I am aware of the disorganized condition of the department when you entered upon your duties, and I am convinced that you have done all in your power to bring order out of chaos. Before the close of the present year I hope to be able to inform the people of New York that every tenement which is unsuited for healthy occupation of its citizens has been vacated. I congratulate you on what you have done in this direction since you have been in office, but I cannot refrain from urging you to use all the means at your command to remedy the grievances which have been complained of and close up any house in this city which is not fit for human habitation."

Regulations in regard to plumbing and ventilation have also been adopted, and under these there is to be an entire abolition of what is known as the "school sink" in tenement houses, and the substitution therefor of water-closets. Provision has also been made for the use of extra heavy cast-iron pipe in all cases, and the use of tarred iron pipe will not be allowed. All closets must be connected with the outer air. Among the other evidences of new vigor in the administration of the Health Department is the prosecution of a number of physicians for neglecting to report births and cases of contagious disease occurring in their practice.

PATHOGENIC MICROÖRGANISMS IN SPUTA.

In some investigations on this subject, the full records of which are published in the *Zeitschrift für Hygiene*, Bd. 2, 1887, D. BIONDI took sputa from 50 persons, some in health, others ill, and injected it into animals. When pathogenic results followed the tissues were searched for microörganisms, and these cultivated and isolated. In this way he found 5 different kinds of microörganisms. Of these the *Bacillus salivarius septicus* was found in 20 per cent. of the sputa examined, and it was most abundant in the sputa secreted before mid-day. Dogs and mice into which .5–1 cc. of such sputum was injected died in the course of 24 to 72 hours. Before death there was usually fever, sometimes also continuous coma. In some cases death did not take place till after the lapse of 30 days, the animals gradually emaciating, and the hair falling, etc. After death œdema and hæmorrhage were found about the point of infection, as well as in the parenchymatous organs and serous cavities. The spleen was swollen, and the microörganisms were found in the blood.

Biondi made a careful examination into the biology of these bacilli. They are short, elliptical rods, somewhat pointed at the ends. He found that if the infected blood was used as a means of inoculating from animal to animal it was strongly pathogenic. On the contrary, if the bacilli that had been grown on artificial culture media were used the pathogenic power diminished with the age of the culture. It was also found that if the bacilli grown in artificial media were used as a vaccine material animals were protected from the more pathogenic material.

Another form—the *Coccus salivarius septicus*—was found in the sputa of a patient who had puerperal septicæmia. Mice, guinea pigs and dogs inoculated with it died in from 4 to 6 days. The blood contained the cocci isolated or in small groups. In the tissues they were found constantly in thick nest-like collections. They did not cause purulent inflammation. They grew rapidly on agar agar, gelatin, blood serum and bouillon, and did not render them fluid. On potatoes and milk they grew poorly; and developed best at the temperature of the blood. They also developed at a temperature of 18°–20° C.

A third form—the *Micrococcus tetragones*—was found three times. Animals infected with it died in from 4 to 8 days. The most pronounced symptoms were great weakness and feebleness. These cocci were found in unusual numbers in the blood and secretions, and in greatest numbers in the lungs. They grow on all the usual culture media, and at the usual temperatures. They are pathogenic to mice and guinea pigs, but not to dogs or rabbits. The pathogenic activity of the cultures was not altered by their age.

The *Streptococcus septo-pyæmicus*—the fourth form—was found three times in the sputa of persons who were ill (angina phlegmonosa, laryngitis, erysipelas). The sputa were pathogenic, but not constantly, in guinea pigs, mice and dogs. The dogs generally died of a form of chronic septicæmia, and the guinea pigs and mice of a collection of pus found at the point of infection, which had a tendency to spread through the subcutaneous tissues and muscles. This coccus grows on agar agar, bouillon, and potato. It appears to be identical with the coccus of erysipelas, and of phlegmonous and puerperal sepsis.

The fifth form—the *Staphylococcus salivarius pyogenes*—was found in an abscess produced by injecting beneath the skin of an animal sputa from a patient suffering from scarlatina anginosa. Besides this, abscesses often developed at the point of injection, which contained staphylococci identical with the *aureus* and *albus*. The *S. salivarius pyogenes* differs from these in that it renders culture media fluid more slowly. On agar agar the culture appears

whitish gold-yellow, the *aureus* being deep red and the *albus* snow white. On gelatin it frequently forms a membrane, which is not the case with the others. It is very resistant to both high and low temperatures.

THE OBSTETRICAL ADVANTAGES OF OTTER TAIL CO., MINNESOTA.—Otter Tail, one of the frontier counties of Minnesota, bids fair to rival the Rotunda Hospital or the Allgemeine Krankenhaus of Vienna as a resort for aspirants for obstetrical advantages and greatness. Dr. T. G. Hutton, of Fergus Falls, writes us that there are now in that county living quadruplets one week old, living triplets eight months old, living twins born of a 16-year old mother, and a child 12 months old whose mother is now only 14½ years old. It may be added, for the benefit of those who may hesitate between Vienna and Otter Tail Co., that the latter place is just as accessible as Vienna, and the cost of living is less. The only reasonable objection to the frontier county is that the vernacular is English; nevertheless, it contains, we believe, a large number of Germans.

SOCIETY PROCEEDINGS.

ST. LOUIS MEDICAL SOCIETY.

Stated Meeting, April 30, 1887.

THE PRESIDENT, S. POLLAK, M.D., IN THE CHAIR.

DR. MEISENBACH presented a specimen from a

STRANGULATED OMENTAL HERNIA.

The patient was a middle aged man. On January 16 Dr. Wesseler saw him suffering with a strangulated hernia, which he reduced. The man had had hernia for the last seven or eight years—hernia of the left inguinal region. After the reduction he neglected to wear his truss. Five days after the first strangulation of the gut, while lifting, the intestine came out and became incarcerated. Dr. Wesseler attempted to reduce the hernia by taxis, failed, sent for me, and I failed to reduce it. Under taxis the tumor became flaccid, and as the more urgent symptoms had been ameliorated, it was decided to wait till morning and see what development would occur. During the night the patient's condition again became worse, the tenseness of the tumor increased, and vomiting occurred. An immediate operation was advised. The tumor was very tense, and there appeared to be some exudation, as on palpation there was marked resistance and that evidence of doughiness which is very difficult to describe, but which is very perceptible to the sense of touch. The man was anæsthetized, the usual incision made over the tumor and an attempt made to reduce it without opening the sac. When I thought I had reached the gut I found that I had only cut down to the sac, because upon making a very minute puncture, after trying in vain to reduce the hernia without opening the sac, I found there was an exudation of about three-quarters of a pint of serum. Even then it was impossible to reduce the tumor. Upon opening the sac I found a coil of intestine within it, and an immense mass of omental tissue. I finally succeeded in replacing the gut within the abdominal cavity. The gut seemed to be still living, and in a condition which seemed to promise that it would live. Its color was a deep cherry or wine color. I returned it to the abdominal cavity, as there were no evidences of gangrene in any portion. But when I came to the omental tissue I found that there was such an extensive coil, with strong adhesions present, that it was impossible to return it. I attempted ligation and the dissecting off a portion of the tumor, but such hæmorrhage ensued that I desisted, being afraid to dissect off the adhesions to the walls of the ring for the same reason. I could not get at the underlying tissues effectually enough to control the hæmorrhage that might occur, and I was afraid to cut off the omentum that was protruding and leave a stump that would probably cause the same danger, hæmorrhage into the abdominal cavity. I concluded to leave the omental tissue within the sac or extruded from the sac, and suture the sac to the neck of the omental protrusion. The patient for the first 24 hours seemed to be doing fairly well, but within 48 hours he died, I think from shock, because upon the autopsy we found the abdominal cavity free from serous and hæmorrhagic exudation, but that portion of the gut which had been entangled in the sac for over 12 hours was black; it had not broken down; there were no points of puncture, of rupture or signs of extravasation, but there was this first stage of gangrene. I found all the parts surrounding the internal and external abdominal ring and in the line of the operation in good condition; there was no infiltration.

If the operation had been performed six, eight or ten hours earlier could the man's life have been saved? Did the protrusion or the leaving of the omental tissues in the situation in which we left them have anything to do with the hastening of the collapse of the patient?

DR. F. J. LUTZ mentioned a case of omental hernia in which he pursued a different course from that taken by Dr. Meisenbach, the indications being different. It was an umbilical hernia in a woman 35 or 40 years of age, who received an injury, some eight years ago, by falling on the ground and striking a piece of wood on her abdomen. She was a very large woman, weighing about 200 pounds. She then noticed a protrusion which gradually became larger and gave her much pain, the size and pain increasing. There appeared to be no question as to the nature of it. The feel of the tumor indicated that the bowel was not included. There were certain symptoms, however, which had latterly appeared and which indicated that there was considerable traction upon the stomach; the mass of omentum in the tumor was so great, that whenever any kind of fluid

or even liquids which could develop gases in the stomach were introduced there was such an amount of traction and pain as to make the patient's condition unbearable. The supposition was that possibly latterly a portion of the bowel or stomach had got into the sac. No truss or appliance has ever reduced the tumor. I opened the sac and at once came upon a mass of omentum, which appeared very much like a fatty tumor, so that when we have made an incision into them there were a number of fibrous bands extending and forming, as it were, separate cavities, which cavities were filled with the omental mass. The sac appeared about the size of a man's fist, and yet probably three times as much omentum as would be represented by a man's fist was in the sac, so firmly and densely was it packed; and after unraveling the omentum it was seen to escape from an opening perhaps three-fourths of an inch in diameter, that it had been greatly enlarged and thickened, and was firmly adherent to the surrounding structures, so that it had to be dissected off. On finding that the contents of the sac was omentum, the first suggestion was that this omentum should be reduced into the abdomen, and I succeeded at first in introducing a part of it, but afterwards I did not succeed in getting it into the abdomen. Then the question of enlarging the opening through which the tumor escaped, was presented. The objection was that I had not put my hand or any instrument into the abdominal cavity because I had checked the hæmorrhage at this period; nothing had been done to the sac except make an incision in the median line. If I enlarged the opening I possibly could not succeed in keeping all the blood out; and as it would undoubtedly be necessary to manipulate, the contents of the bowel might escape also. Then it seemed that if this woman had got on for so long a time without that omentum in her abdomen, because it was only latterly that any disturbance had occurred, possibly she would get along just as well afterward without it; I therefore, after reducing some of it, or as much as I thought would relieve the tension on the stomach, proceeded to ligate the mass with strong silk ligatures in three or four places, and cut off the remaining portion of the omentum. The stumps were then readily reduced. I then began to sew up the opening in the abdominal cavity by means of four interrupted sutures, which, however, only approximated the parts, and after that I removed the sac, leaving a ring of peritoneum outside the abdominal cavity; in other words, not cutting the sac off very close to the sutures, I left half an inch, and dressed the cavity, which was left after introducing a drain of sublimated gauze. The patient is getting on very well.

DR. E. H. GREGORY said it had always been his rule to strangulate the omentum and cut it off just beyond the ligature and leave the remaining portion in the ring, not disturbing it at all, leaving it there in the hope that it may serve as a plug, or a sort of internal truss. He never disturbs the adhesions of the omentum at all, but simply strangulates it, being very careful to unravel it, because occasionally when we think we have reduced the bowel completely we find nestling in the meshes of this omentum yet remaining a knuckle of intestine, and it requires a great deal of caution lest we might embrace a portion of the bowel in the ligature; so that it has been his rule to unravel the omentum as perfectly as possible, then ligate it, using three or four ligatures occasionally, but usually simply a double ligature, which enables me to embrace it in two loops, and then cut it off. In a case like this I should certainly have recommended an excavated truss—a pad that was sufficiently capacious to have received this mass, and a resisting pad, one that would have prevented any increase of the tumor, and I should have hoped from the pressure of this pad, persistently used, to reduce the size of the mass; I should have hoped for this result; I have seen it happen, and I attach as much importance to the good results of an excavated pad as I do to the ordinary pad for keeping up a hernia. If a pad be properly constructed, if it fit closely to the mass, it certainly prevents any additional protrusion of the mass. No one who has an irreducible hernia ought to do anything which is likely to produce a protrusion; if he has a stricture it ought to be cured, because every effort at discharging the urine is apt to produce a fatal protrusion. But I believe that circumspection under these circumstances, and properly fitting excavated pads, make these hernias almost as safe as ordinary hernias which are kept up.

In regard to the intestine. We have some rules in surgery. One rule is that if there is a doubt in our minds as to the propriety of performing a surgical operation, we should give the patient the benefit of the doubt by not performing the operation. Hernia forms an exception to this rule. Where we have a protruding mass with urgent symptoms, or symptoms which suggest the propriety of surgical operation, the best way is to operate—to give the patient the benefit of the doubt by performing the operation, because the operation gives him a better chance than procrastination; so that when I have a case of hernia, if there is a doubt in my mind as to the propriety of an operation, I always operate. That is my rule. When I open the hernial sac and find the intestine changed, but intact, if I am in doubt as to the propriety of returning it, I put it back; if I am not, I leave it out; that is, if I am satisfied I should not return it I leave it out, because I am satisfied from the condition of the gut that it would be perilous in the highest degree to put it back; it is dead, and I certainly leave it out. I cut it open and empty the contents of the intestine. But whenever I am in doubt to put it back or not, I put it back, because it is then in the best possible situation to be restored—to have its vitality restored. If left out, it will most probably die; if put back we will always hope that it will grow better, because then the intestine is at home. An earlier operation in Dr. Meisenbach's case would have been infinitely better, and must be infinitely better in every case of strangulated hernia to operate at once. The question is, is a hernia strangulated? is it simply incarcerated? is the transit of its contents simply arrested, or is its circulation interfered with? Whenever there

is strangulation, the circulation of the part is arrested; the term includes the idea of a vital interference with the circulation, and whenever there is a strangulation, relief must be afforded as quickly as possible. There being strangulation, there is no ground for the surgeon to stand on. I always say to a patient before I give him the anæsthetic, I am going to give you an anæsthetic and put you upon the table, and when you wake up you may find that I have operated, because if I fail to reduce the bowel, I shall make an opening which will enable me to relieve this constriction. I often succeed in reducing, but always have this sort of an understanding. Generally the symptoms of strangulation are very distinct, unequivocal; of course there are exceptions, strange and mysterious as it may appear; a bowel may be fatally nipped without urgent symptoms; but as a rule there are urgent symptoms, and there can be no question about the propriety of an immediate action.

Dr. D. V. Dean said that Dr. Meisenbach's case brought up one point that is likely to be the subject of some discussion in the near future, the matter of resection. One of the younger surgeons of this city is preparing a paper in which he cites a considerable number of cases in which strangulation or incarceration existed quite a brief period of time and herniotomy was performed; and, death following, a post-mortem examination showed minute punctures or openings in the line of constriction of the bowel. He asked me to look up my cases; and I found an account of a case in which an operation had been performed, and, in the report of the autopsy it was stated that minute openings were found. In all my later practice, if the tumor do not reduce readily, I give an anæsthetic, and then if it do not reduce, perform an operation. But this question of resection is one that is important to consider. Of course it would not have saved the patient's life in Dr. Meisenbach's case at the time he operated, for he died of shock. I expected to hear that there were openings at the line of the constriction, and I was almost sorry this condition was not found. But, if the patient had not died of the shock, he would have died from the results of gangrene of the bowel.

Dr. T. F. Prewitt thought the great mistake that is made in nine cases out of ten of strangulated hernia is that the operation is not performed early enough. It is always safer to operate early with or without antiseptics. It was before we had antiseptics; it is so now. The danger to the patient of not operating is in proportion to the damage done the bowel. I venture to say that in 99 cases out of a 100, if they are operated on even needlessly, and the operation was done properly and skilfully, the patients would do better than if they were let alone. The operation is not a dangerous one itself. It is the condition of the bowel which imperils the life of the patient. There are two or three points in Dr. Meisenbach's case that interested me. In regard to the condition of the bowel, I think it was Mr. Keyes, one of England's most couservative surgeons, who said that under all circumstances the best place for the bowel is in the belly. He did not mean by that that it should apply to the case of a sphacelated bowel, that such a bowel should be pushed into the belly; but that it should be the rule that in cases of doubt, the bowel should be returned to the neck of the sac; it should always be done if there is the slightest doubt about its being dead; that is the proper thing to do, even if it is dead you cannot do any harm by it, for the very reason that if the bowel is dead, nature is there to protect it, she throws a protecting wall around inside by the localized peritonitis which has taken place in the abdominal cavity, and unless the surgeon ruthlessly thrusts his finger up and breaks up the adhesions, the abdominal cavity is thoroughly protected; and if he presses the bowel down to the neck of the sac and leaves it there, even though it is absolutely dead no harm will result. The statement of Mr. Keyes did not apply to any such procedure; it simply implied that it should be pressed back to the neck of the sac and left there. If it was dead an opening of the bowel would take place spontaneously and an artificial anus established by nature's methods. In all cases in which there has been acute strangulated hernia, and the bowel is in bad condition, it is never prudent to thrust the bowel into the peritoneal cavity; it should simply be pressed into the opening and left there, and if its vitality is not fatally damaged it will be all right. In a case of recent protruding omentum, where strangulation takes place, whether the bowel empties or not it ought to be returned without an operation. All hernias ought to be returned without operation unless there is good reason to believe there is serious damage to the contents of the sac; this is the only condition which makes it prudent, advisable or good surgery to open the sac, unless the conditions are such that it will not go back into the sac. Then of course it is absolutely necessary to open the sac.

In the old cases of hernia, where the omentum has protruded a long time, it invariably thickens up and looks like a mass of fat rather than omentum; its character is entirely changed. We may be able to unravel it, as Dr. Gregory says, but I believe that whenever, in an old hernia, the omentum has undergone this sort of change, as it will inevitably, sooner or later, if it be protruded, especially if the patient is in the habit of wearing a truss—I believe in all such cases where a strangulation takes place, and when the bowel becomes strangulated, it does not matter whether we can reduce the bowel or not, I believe it is infinitely better for the patient that we cut off the omentum; and I think the patient is in a vastly better condition than if it is left; because if we leave it, the patient will suffer some time or another with strangulated hernia, whereas if we cut off the omentum we furnish the best condition for a permanent cure. Destroy the sac if you choose, dissect off the entire sac, and leave the pedicle as a plug in the outlet. I believe this is better practice. Most certainly it is advisable in every case of strangulated hernia upon which we have to operate, where the bowel cannot be reduced, and it is necessary to open the sac. I believe the best practice in those cases is to ligate the mass of omentum and cut it off; not, however, without first searching in the omental sac for a knuckle of intestine, where it is very apt to lie

concealed. Some years ago a patient came to me with a large scrotal hernia and desired to have it operated upon. I opened the sac and succeeded in getting the bowel back, but there were three pounds of omentum which I cut off, tied it, left a pedicle in the opening, and he got well, not without a bad symptom, though, because he had a good deal of trouble; an inflammation set up in the scrotum, there was a good deal of sloughing, etc. I used antiseptics, but probably imperfectly. In another case of an old woman that I operated upon, I cut off quite a mass of omentum, and the result in this case was good. Dr. Lutz, in speaking of the case of omental hernia, said he did not understand what good a concave truss would do; that it could not push the mass back. That is true, but the object of the surgeon is not to push it back, but it is to prevent the further protrusion that we use this truss. If that woman had worn a concave truss when the hernial mass was one-half the size it finally attained, she would not have had the disagreeable symptoms—the dragging sensation. I think Dr. Lutz acted wisely in cutting it off. I think it would be bad to push it back into the abdominal cavity. It is like a foreign body when it is so pushed back. It has lost the character of omentum; it would be an irritant, and I believe it is bad practice to push it back when it is possible to do it. It is better to tie it and cut it off.

DR. MEISENBACH said it occurred to him that the correct procedure would be to cut off the omental mass, leaving the stump to plug the abdominal ring, but he could not carry out his original intention on account of the hæmorrhage. He does not think, however, that there was any chance for the bowel to get out again. If he had not found that the patient died from shock, he would have thought that possibly if the omentum had been cut off and returned, it might have given the patient a better chance.

DR. T. F. PREWITT presented a case of

POPLITEAL ANEURISM.

This man is 31 years of age now. When a boy something like 14 years of age he received an injury in the popliteal space from a file which his brother threw at him. There was a little hæmorrhage at the time; there was perhaps a little swelling, but he tells me he was going about after a little while without difficulty, and it gave him no trouble for years. In 1878 he had an attack of sunstroke, and some little time after the sunstroke, a month perhaps, while sitting at the table looking out of the window, he felt a peculiar sensation in the popliteal region and a general weakness, and putting his hand down he felt the pulsations of a swelling in the popliteal space. He says the leg swelled a great deal and that the pulsation was very marked, more so than it has been since that time. He called his mother's attention to the tumor, and she put her ear to it, and could hear the bruit very distinctly, like water rushing through, as she expressed it. Then a physician was called in, who recognized that it was an aneurism, and asked the late Dr. Hodgen to see it. He saw it and was very much interested in it, and advised that he wear an elastic stocking. The patient did this, wearing out two pairs. I first saw the patient some two or three years ago, when he was suffering from alcoholism, and he called my attention to the aneurism. I recognized it as an arterio-venous aneurism. I was undecided whether there was a well-defined sac or not; it was a very soft swelling, very easily compressible, and it seemed to me more like a dilated sac than like a varicose aneurism. An interesting feature about it is that, as I have stated, the injury from which the trouble started occurred twelve or fourteen years previous to the symptoms of aneurism appearing. This form of aneurism is almost always the result of injury; not always, because they are sometimes actually congenital, but I think Mr. Bryant states that of 57 cases of aneurism of this character perhaps 32 or 33 were traumatic. A very large proportion were traumatic; and we generally expect to find them occurring from some traumatic origin. Another rather peculiar fact is that when I saw the case it did not strike me that it was likely to give him much trouble; it was not a very large pulsating tumor; and as it is the rule in surgery to let them alone unless there is some good reason for interfering, I paid but little attention to it. Subsequently, however, he went out and fell into the hands of another physician, who operated, and as I understand tied the artery above the point of communication. I learned from him that this never seemed to stop the pulsations, or never completely did so. Whether or not the sac was laid open at the time of the operation I do not know. At all events I understand the artery was tied above the communication. He came back to me recently with the tumor considerably enlarged. Before I knew what had been done I examined the case, and satisfied myself that it had not been tied below, because if we make pressure above it does not stop the pulsation; but if you make pressure below you can control it. He tells me that after the operation he was in bed for five months, and that after getting up he had to go about on crutches for two months. The tumor is undoubtedly fed by the return current. Tying the artery above cuts off the direct current. I will tie it below.

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

Stated Meeting, April 20, 1887.

THE PRESIDENT, JOS. TABER JOHNSON, M.D., IN THE CHAIR.

DR. L. L. FRIEDRICH read a paper entitled

ENDOSCOPY.

As is generally conceded the endoscope is an instrument that is very little used by the profession at large, and to some its use and appearance are very vague, and, in fact, unknown. The busy practitioner has no time to use it, and hence only a few specialists are in the habit of employing it either as a means of research, or, more properly speaking, as an aid in diagnosis and treatment in obstinate diseases of the urethra and bladder. The older and more complicated instruments of Desormeaux,

Cruise, and their various modifications, are no better than a simple straight urethral tube, blackened on the inner surface and furnished with an obturator. They may be either metal or hard rubber. The latter are to be preferred for caustics. These instruments are made of various sizes, from No. 18 to No. 26, Charièrre scale.

To make a thorough examination the tube, having been well oiled and warmed, is introduced gently into the membranous urethra, the obturator withdrawn, the oil and mucus wiped away from the presenting membrane at the bottom of the tube by means of a little cotton twisted on a long double-ended probe. The illumination is then brought to bear directly upon each portion of the membrane inspected as the tube is withdrawn. The ordinary laryngoscopic reflector answers every purpose. With a little practice it is not difficult to distinguish healthy from diseased tissue. But, as with the ophthalmoscope, at first all seems red. The healthy mucous membrane has a pale, pink color, and contrasts strongly with congested spots, which are of a vinous red without polish. Such spots can be plainly seen as they come across the end of the tube. Any granulations are readily recognized by the practiced eye, and local applications of considerable strength made which could not be applied with safety by any other means. Great care is to be exercised that the cotton on the end of the probe is firmly attached, and the patient at the same time warned not to move or violently withdraw the tube so as to leave the cotton with the caustic either within the bladder or posterior urethra. The topical remedy for granulations suggested by Desormeaux, and which can be very accurately applied, is a solution of nitrate of silver ℥ij to the ℥j (8 to 32) up to a saturated solution. The latter should only be used in case of large granulations, and then only very lightly. Iodine, sulphate of copper, tannin, etc., are also used, and give fair results, especially copper sulphate 33 per cent. The great advantages of this method of treatment are, that the spot to which an application has been made may be inspected from time to time and the effect of treatment be critically observed. This treatment is to be repeated at first several times a week, then weekly until the cure is established. Success is sure to attend the prolonged intelligent use of the endoscope. But it is only the most obstinate cases, which have withstood other treatment, that require the prolonged applications.

The occurrence of urethral chancre is not very uncommon. It is my fortune at present to have under treatment a case, which the endoscope served to detect, that several eminent gentlemen had been treating for gonorrhœa. There was no lumpiness around the urethra, no painful spot on erection, no bloody discharge from the urethra, yet upon a careful examination I detected upon the roof of the urethra, about one inch from the meatus, the chancre, a slight oval sore whence the discharge emanated. This is undoubtedly a urethral chancre, for gonorrhœa does not produce an ulceration of the urethral mucous membrane. No doubt the creamy discharge, with the pain on micturition, led to the mistake in this case, as is likely where only a superficial or hasty diagnosis is made. When last seen the patient had the enlarged inguinal glands, and the other symptoms of the constitutional disease, namely, roseola syphilitica, etc.

A similar case has been reported of a patient who was treated for gonorrhœa, his symptoms being those of a creamy discharge and pain on urination. After awhile constitutional symptoms were developed; and the endoscope introduced long after showed a faint cicatrix at the point of the old ulcer on the upper surface of the canal.

Prof. von Dittel showed that by means of the endoscope and electric light the interior of the bladder could be thoroughly examined. Prof. Ultzman uses the endoscopic tube with brush attachment, without aid of reflected light. He claims that by this means he can do just as well, and as the other procedure takes too much time for his extensive practice, he prefers it. Grünfeld gives a great variety of diagrams and plates for the different portions of the urethra, which he claims are characteristic for each. Polipi, epithelial growths, etc., are readily seen. Prof. Janowisky, of Prague, says that the endoscope is sometimes valuable in prognosis, and as an aid in diagnosis, especially in the strictures of wide calibre, as described by Otis.

Dr. Yarrow said that he had tried to use the endoscope but had never been successful, probably from lack of skill.

Dr. Friedrich found difficulty in using it at first, but after seeing it in the hands of the masters he had learned to use it successfully. He found that one must work quickly and must wipe away all the mucus and oil before a good view can be obtained; even then the field soon becomes dimmed.

Dr. D. S. Lamb reported a case of

DEATH FROM ILLUMINATING GAS.

Dr. R. D. DeL. French, who was called to the case, writes me as follows: Lucy K., mulatto, age about 18, retired between 10 and 11 P.M., March 31, 1887, having first blown out the gas which was turned on full. Nothing more was heard of her until her employer rapped at her door without receiving any reply after 6 A.M., April 1st. The room being forcibly entered, she was found asphyxiated, the gas having been escaping into the room from the time when she blew it out. Her body was cold and rigid lying partly on the right side with her tongue out and her mouth full of and covered with froth. She was almost pulseless and her respirations slow and shallow. Pupils completely contracted and her skin and lips pale. She had vomited (some remaining in her mouth), and had evacuated the contents of her bowels. The window had been opened and the doors and other windows allowing the gas to escape. A good stiff breeze was blowing into the room through the open window. I had the patient placed in front of the window immediately; her limbs swathed in sinapisms and hot poultices applied to her thorax. Ordered 5 grains carb. ammon. every half hour and whiskey *ad lib.* Applied electricity, one electrode to cervix and the other to præcordial region. This

treatment was kept up until reaction set in late in the day, after which the temperature rose to 100° and varied from 100° to 102° until the fifth day when it rose to 105°. I controlled the temperature by the free administration of antipyrin. Continued the ammonia and whiskey, and gave beef tea as much as could be taken. I omitted to observe that I washed out her bowels with hot water which assisted in bringing about reaction on the first day. On the seventh her temperature was 99° and her pulse 84, with the reflexes pretty well reëstablished. Her general condition decidedly better and the outlook hopeful. On the morning of the eighth she was much the same as on the previous day and was taken to Freedman's Hospital. Her urine was drawn twice daily with catheter.

Dr. C. B. Purvis, Surgeon in charge of the Hospital, had been called in consultation during the progress of the case. Patient died next day after admission.

An examination was made by me about 25 hours after death; the skin and conjunctivæ were remarkably pale; the muscles bright red; blood everywhere fluid except in right ventricle of heart where were two small clots. Brain showed slight softening and the vascular points were well marked; membranes were well supplied with blood; sinuses not overfull. Some hypostatic congestion of lungs. Heart flabby; cavities, especially the right ventricle, deeply stained. Liver showed interlobular congestion. Spleen bloodless, slate colored throughout. Kidneys normal. Small quantity of whitish semi-fluid matter in bladder. Uterus and ovaries congested.

Wishing to compare this case with others, I collected 16 from the medical periodicals, and analyzed and summarized the symptoms and post-mortem appearances. They comprise the following:

2 cases by Teale; both died 11 hours after exposure. Guy's Hosp. Rep., 1839, iv, pp. 106 to 112.

2 by Owen; recovery in a few days. *Lancet*, 1869, i, p. 159.

3 by Jessop; 2 were found dead, the third recovered. *Lancet*, 1870, 1870, ii, p. 816.

3 by Smith; they died about half an hour after exposure. *Indian Med. Gaz.*, 1872, vii, p. 76.

1 by Taylor; death about 36 hours after exposure. No necroscopy. *Edin. Med. Jour.*, 1874, xx, pp. 17 to 36.

1 by Dexter; rapid recovery under 15 drop doses of spirit of ammonia every 10 minutes. *Jour. Nerv. and Ment. Dis.*, Chicago, 1876, ii. p. 412.

1 by Hearn; death about 50 hours after exposure. *Brit. Med. Jour.*, 1876, ii, p. 77.

1 by Macbain; recovered but remained weak for several weeks. *Edin. Med. Jour.*, 1887–8, xxiii, pp. 512–4.

1 by Sheddon; recovered in a few hours; headache for several days. *Lancet*, 1878, i, p. 786.

1 by Morris; death 36 hours after exposure. No necroscopy. *Maryland Med. Jour.*, 1880–81, pp. 341–7.

Of these 16 cases which therefore do not include the one reported by me, 10 were men, 6 women; 10 recovered, 6 died; the ages ranged from 22 to 82; of 4 the age was not stated, but judging by the descriptions, it was probably between 20 and 50. Death occurred in 3 cases within a half hour after exposure; in 2 cases in 11 hours; in 2 cases about 36 hours; in one case 50 hours. In that reported to-night, life was prolonged 8 days. The accident happened of course oftenest at night; exposure usually beginning between 10 and 12 P.M., and ending between 6 and 9 A.M.; averaging about 10 hours. The variable time at which death occurs after exposure is probably to be explained by different proportions of gas in the air.

An examination of the signs noted by those who attended the sufferers at or soon after their release from exposure, shows sufficient uniformity to enable us to fix upon some as characteristic. Stupor was most frequently noted, in 10 cases; and in the absence of any statement to the contrary, was probably present in all. In studying reports of cases we often meet with a failure to note a sign or symptom which was nevertheless probably present. Next to stupor in frequency were noted coldness and pallor of the skin, stertorous and shallow breathing, odor of gas in the breath, dilatation of pupils, and rigidity. Occasionally it was stated that the face was swollen, skin was livid, skin was of normal heat, there was sweating, there was frothing at mouth, pupils were contracted, or one dilated and the other contracted, there was spasm of jaw, or even convulsion, pulse was regular or small and weak, or not felt. But the signs most frequently noted as stated above were, I believe, characteristic.

Sometimes on removal of patient to the open air, the breathing became more difficult and there was an increase in rigidity especially shown by the spasm of the lower jaw.

The treatment which appeared to be of most service was as follows:

1st. The access of *fresh air*, obtained usually by opening windows and doors; preferably by removing the patient to a room distant from the poisoned air. In some cases the direct inhalation of *oxygen gas* has seemed to be of benefit; the two cases reported by Owen were thus treated and recovered. From a careful consideration of all the cases, I have concluded that the *recumbent position* is the proper one in which to place the patient; not sitting, as some have attempted. In 3 cases artificial respiration was tried, but the patients died in spite of it.

2d. *Warmth.* Fresh air furnishes the necessary oxygen to the blood; warmth favors the circulation and all other functions. Cold affusions were used in two cases; both died; I fear that whatever advantage may be derived from the shock is more than neutralized by delay and interference with necessary functions.

3d. *Diffusible stimulants*, as brandy, whiskey, ammonia; by mouth, rectum and hypodermatically. The case which showed the most rapid recovery was one in which 15 drop doses of spirit of ammonia were given every few minutes.

Faradization or galvanism was tried in several cases which however died. Tickling the fauces in one case seemed to be beneficial; the effort at vomiting cleared the air passages of frothy mucus, after which breathing improved.

On the whole then, the best treatment is to secure fresh air, and if possible pure oxygen; the recumbent position; warmth; diffusible stimulants; with such aids as artificial respiration, electricity and nutrient enemata.

In the 10 cases of death there were 7 post-mortem examinations, with the following results. The rigor mortis varied so much that no importance can be attached to it. The face was placid showing the anæsthetic quality of the poisonous gas; there was no appearance af pain or struggle. The muscles were usually of a bright red color, showing the action of the carbon monoxide; the blood also was brighter than ordinary venous blood. The pupils were usually dilated. The blood usually fluid, clots being very rare and small; showing interference with fibrinosis. Skin and tissues generally rather pale and bloodless. No unusual vascularity of scalp; blood in venous sinuses not noticeably increased in quantity; sometimes the membranes of brain congested; brain itself rather pale; usually no increase of serum in ventricles. Heart either normal or soft and relaxed; usually no clots, blood being fluid and ventricular lining deeply stained. Occasionally congestion, mostly hypostatic, in lungs, sometimes emphysema. Trachea and bronchi congested and filled with frothy mucus. Odor of lungs and air passages sometimes napthous and sweet. Liver nearly always normal. Spleen usually normal, sometimes large, red and soft. Kidneys, stomach and intestines normal. Bladder generally well filled with urine; in one case there was a half oz. of opaque white liquid.

A comparison of the case reported by me will show a general resemblance of signs and post mortem appearances with those above analyzed.

Prof. E. S. Wood, of Harvard University, read a paper before the 1876 meeting of the American Public Health Association, on illuminating gas in its relations to health; published in the transactions of that year. He describes the manufacture of the gas, its impurities and modes of removing the same. He states that the gas as usually made consists chiefly of hydrogen (40 to 50 p. c.) marsh gas (35 to 40 p. c.), carbon monoxide (4.5 to 7.5 p. c.) olefiant gas and other hydrocarbons (4 to 8 p. c.), and usually very small amounts of carbonic acid and air. The use of mineral oil to enrich the gas is an advantage in so far as the absence of sulphur and ammonia lessens the necessity for purifying from these substances. What is called "water gas," used in some places, contains 30 to 40 p. c. of carbon monoxide and is objectionable from the absence of odor, which prevents discovering its escape and thereby increases the danger of poisoning. The use of petroleum imparts a powerful odor to gas, by which its presence is very quickly detected in very minute proportions. About 11 to 14 p. c. of the gas in air forms an explosive compound; a much less p. c. is poisonous.

The effect of breathing it in a dilute state is to produce stupor, making the patient oblivious to the danger and even unable to give an alarm. Death is doubtless through narcotism not asphyxia. The haematotic and fibrinotic functions are seriously deranged, so much so that though a patient may recover from the accident, he is liable to die from the failure of these functions. At least so it appears to me. Traube is quoted as saying that those who apparently recover from poisoning by the gas lead afterwards a wretched life and meet a lingering death from some lesion of the lungs, heart or brain.

The cases reported show that the gas may find its way through sewers and house drains, and through loose earth and rubbish for quite a distance into living rooms. It is possible that vague symptoms with which we sometimes meet and which we are unable to remove may arise from a constant inhaling of this gas in a very dilute form; its presence unrecognized. I think the suggestion is worthy of consideration.

Dr. E. M. Schaeffer related some experiments at which he assisted about twenty years ago which might suggest a therapeutic measure in cases of poisoning by gas. The subcutaneous tissue of a young dog was inflated with oxygen gas by means of a trocar thrust under the skin in such a way that the skin made a valve to prevent the escape of the gas. The animal was then put into a barrel filled with carbonic acid gas and allowed to remain there for half an hour, when he was found to be breathing stertorously. He was then taken out and very soon he began to play about as if nothing had happened. He was no longer blown up like a balloon as at first, but was of natural size and appearance. Possibly a similar method of employing oxygen gas might be of use when the respirations were too feeble to give it by inhalation.

Dr. Busey had been called to see a lady who had been found unconscious from the effects of gas. When he saw her she was conscious but her intellect was clouded, the respirations were slow, the pupils were dilated and the pulse very rapid and feeble. He exhibited 30 drops of aromatic spirits of ammonia every half hour and recovery was complete.

Dr. Toner once saw a man who was apparently dead when discovered. He was comatose, the pupils were dilated, vomiting had occurred, the respirations were up to 50 or 60, accompanied by a groaning sound. The pulse was very weak, and there was rigidity and inability to swallow, but the pallor was not marked. He gave ammonia by inhalation, whiskey hypodermatically, friction, sinapisms and artificial respiration. Mucus accumulated in the throat and for six hours his breath smelt of gas. In about six hours from the time when first seen he had recovered sufficiently to be removed from the hotel to a friend's house, where complete recovery ensued.

Dr. E. Carroll Morgan said that about two weeks ago Dr. Chamberlin had had a similar case, but he did not know the history of it, except that the narcotism lasted from six to eight hours. Dr. Morgan thought that in some cases the hotel proprietors were themselves responsible for these accidents, for it is the custom in some places to turn off the gas at the meter about midnight and then turn it on again early in the morning. The result was that lights which had been left burning low were extinguished at first, and when the gas was turned on again it escaped into the room of the sleeping guest. In some States this has been stopped by law.

DR. G. WYTHE COOK had a case of a child of 12 whose mother had put it to bed and had unwittingly turned the old fashioned gas key too far, so that though the light was extinguished the gas continued to escape. The child was found unconscious and breathing stertorously; he was very pale, and had vomited. When seen by him the only symptoms were pallor and headache. Recovery.

DR. G. N. ACKER related an unpleasant experience from inhaling coal gas from a stove. He had retired about 12, and when he regained consciousness he found himself upon the floor attended by a physician and several other people. He was told that he had awakened the people of the house by the loud noises which he made about 3 A.M. He felt stupid for a day after this, and for several days he had a buzzing in his ears and felt very much indisposed. He is now very susceptible to coal gas, which causes flushing of his face and an uncomfortable feeling generally.

DR. C. L. MAGRUDER mentioned transfusion as another method of treatment. Transfusion of blood, milk and saline solutions have been successfully employed in cases of this kind, even several days after the accident.

DR. LAMB stated that in the references which he had looked up transfusion was not regarded as being of much value.

FOREIGN CORRESPONDENCE

ST. GALL AND ZURICH.[1]

Tuberculosis of Cranium—Prolapse of Uterus—Sonderegger—Ambühl—Zurich — Krönlein — Swiss Universities—Resection of Chest Wall and Lung—Osteo-myelitis of Fractured Bones—Infectious Strumitis—Struma Operations—Carcinomatous Stricture of Colon—Klebs—Rohrer.

After visiting Lindau, Bregenz and Rorschach, I arrived in St. Gall May 4. This ancient city is the capital of the Canton of the same name, and although it has only a population of 30,000, it has two excellent hospitals, the Kantonspital and the Buergerspital; the latter, however, is only intended for convalescents, incurables, and serves at the same time as a poor-house. Each of the hospitals contains about 100 beds. Dr. Hilly, a physician of excellent local reputation, has charge of the medical wards, Dr. Feurer of the surgical, and Dr. Kuhn of the gynecological. Both Dr. Feurer and Dr. Kuhn are young, energetic men and excellent operators, and besides their onerous duties in the hospital do a large and lucrative private practice. I saw a number of interesting operations, and satisfied myself that excellent scientific and practical work is done here. The antiseptic treatment is thoroughly carried out and the operating room is supplied with all modern improvements and with an excellent assortment of instruments.

I saw here an interesting case of tuberculosis of the cranium in a woman about 30 years of age, where repeated operations had been performed, and over a large area corresponding to the superior longitudinal sinus the entire thickness of the bone had been removed, but the disease returned a short time after every operation, and at present a number of sinuses lead to tubercular depots. The disease evidently creeps along the structure of the diploë, and is extending very rapidly. By continuity it has also extended to the dura mater, where it has given rise to a tubercular pachymeningitis, as the patient suffers from periodical attacks of headache and vomiting. In the children's ward I was shown a child several months of age with a meningocele the size of an adult's head. As the case is undoubtedly complicated by an encephalocele, no operative measures have been instituted.

Dr. Kuhn performed on the same patient and at the same time three distinct operations for an aggravated prolapse of the uterus. As the cervix was very much enlarged, a wedge-shaped piece was excised from both lips in such a manner that a complete cone was removed and the hæmorrhage arrested by carefully suturing with catgut. The cystocele was corrected by excision of an oblong piece of mucous membrane of the anterior vaginal wall, and the parts again sutured with catgut. The last operation was the customary colpo-perineorrhaphy. During the excision of the flap of mucous membrane the incisions were carried so deep that the rectum was exposed for some distance, and a number of vessels which bled freely had to be ligated. Catgut was used even for suturing the perineum. The German surgeons almost without exception use the knife instead of scissors in vivifying the parts in all vaginal operations, and it certainly seems to me that the wounds thus made are in a better condition to heal by rapid union than in cases where the tissues are cut with scissors. In this case at least a tablespoonful of iodoform was deposited in the vagina with a spatula, and the vaginal outlet was covered with a compress of iodoform gauze. As a disinfectant, both in the surgical and gynecological wards, a solution of corrosive sublimate 1–1,000 is used, and sublimated gauze and cotton as a dressing.

For years I have been aware of the fact that St. Gall was the home of the leader of the medical profession of Switzerland, and I was therefore exceedingly anxious to become personally acquainted with Dr. Sonderegger. I never met with a more cordial reception, and his good wife insisted on serving a genuine Swiss dinner, and the doctor supplied the table with a brand of wine such as can only grow in the most favored valley in Switzerland, a Veltliner almost as old as the doctor himself. Dr. Sonderegger is the author of one of the best books on sanitary matters. He has a national reputation as an orator, and enjoys the respect and friendship of all who know him. With word and action he is always eager to preserve the honor and dignity of the medical profession and to impress his colleagues and the Government with the importance of preventive medicine. To his untiring efforts is due the establishment of a small laboratory in the city, where Dr.

[1] By permission of Drs. Fenger and Senn.

Ambühl, an able chemist, has done excellent service in improving the hygienic condition of the city and surrounding country towns. I am convinced that such an institution, with such a man at its head, is a greater benefit to a community than our more expensive local Boards of Health.

After spending a few days in my native village in the beautiful valley of the Rhine, I came to Zurich, and remained in this place a whole week. The hospital is the same as when I was here nine years ago, but a walk through the surgical wards was enough to show me that a change of directorship had taken place. When I was here before I saw the sad results of the open wound treatment as advocated and practised by Rose in every ward and almost in every bed. The rooms were filled with unpleasant odors from decomposing wound products, wounds were suppurating, and the patients looked haggard and many marasmic. Primary union was not aimed at, and consequently was never observed. Since then Krönlein has taken Rose's place, and the whole aspect of things has undergone a radical change. The open wound treatment has given way to careful antiseptic measures, and in the same rooms you can hardly find a febrile patient. In the great majority of cases wounds heal by primary union, and suppuration is an exceedingly rare occurrence. Professor Krönlein is hardly 40 years of age, with a strong constitution and unlimited capacity for work. He first came into prominence by his controversy with Volkmann, and it is generally conceded that after a harsh and bitter fight he came out victorious. He next became well known as Langenbeck's favorite assistant, and during his term of service he wrote several articles which have since been frequently referred to by most authors and teachers. Switzerland is now to be congratulated that the chair of surgery in all universities is now occupied by distinguished Swiss surgeons. For centuries it had been customary to import young men from Germany as professors, who remained until they received a call from some German university, when they resigned to make room for another one of their countrymen. There was no earthly reason why the Swiss universities should have remained so long as training schools for the German Privat-Docenters, and it is to be hoped that after this, when a vacancy occurs, home talent will at least be given the first chance.

The surgical wards in the hospital contain eighty beds, which are always occupied. Zurich has 270 medical students, of which number forty are females. The female students here, as in the other schools in Switzerland, do not sit together in the operating-room, but prefer to mix thoroughly with the sterner sex. A look at the female aspirants for the medical degree is enough to show of what metal they are made. In the female wards I saw the young lady whose case has been mentioned by almost every medical journal in the world, as Krönlein had removed a part of the chest wall and a portion of the lung for sarcoma. She recovered and remained in good health for more than a year, when a return of the disease was observed in the cicatrix. A few weeks ago the third operation was performed, when another piece of the lung was removed with a still larger section of the chest wall. The wound is now entirely healed, and the patient left the hospital the same day, in excellent health. The last operation was followed by an attack of croupous pneumonia.

From a pathological standpoint another case attracted my interest. A young man sustained several subcutaneous fractures from a fall, and at the same time a lacerated wound of the groin. The case progressed favorably until the wound commenced to suppurate, when he was suddenly attacked by osteomyelitis of the fractured bones, which necessitated numerous incisions for the liberation of pus at the seat of fractures. There can be no question that in this case the pus microbes entered the circulation at the primary seat of suppuration and were arrested at the seat of fracture, where they found favorable conditions for growth and initiated a suppurative inflammation in the medullary tissue. Practically this case should teach us that in a patient who has sustained a simple fracture it is exceedingly important to guard against suppuration in any part of the body, for fear that from such purulent depot germs might enter the circulation and cause a suppurative osteomyelitis of the fractured bone, in the same manner as has been done by experiments on animals.

A case of strumitis with a somewhat similar origin also attracted my interest. The patient was a man about 40 years of age who had been operated upon for empyema by rib-resection some time ago. He had a large goitre since childhood. The case progressed very favorably until the empyema was nearly well, when suddenly the temperature rose and the right side of the struma became painful and tender. After a week fluctuation was well-marked and a large incision was made, which gave exit to a large quantity of fetid pus. The fever subsided at once and the case again progressed favorably until, a week or two later, the opposite side of the struma was attacked in a similar manner. I was present when this side was incised. A large amount of the same fetid green pus escaped. The strumitis was undoubtedly of embolic origin, the germs which gained access into the circulation from the pleural cavity found in the struma conditions which favored their localization and development, and produced a suppurative inflammation.

Of the numerous operations I saw during the week I will only detail two cases of struma operations. In both cases the operations were performed to relieve distressing symptoms. Chloroform narcosis was only kept up until the tumor was fully exposed; after this it was considered dangerous to continue its administration for fear that it might produce asphyxia.

The first case was a boy 20 years of age who had the commencement of a goitre ten years ago. The tumor gradually increased in size until recently it has given rise to a great deal of difficulty in breathing. Externally the tumor is not prominent, but when the head is thrown backward it can be distinctly seen to dip down behind the sternum. He has also experienced some trouble in swallowing, and its presence seems to have kept up a constant irritation in the trachea. The incision was made along

the anterior margin of the sterno-cleido mastoid muscle, and hæmorrhage arrested as the tissues were divided layer by layer, until the capsule proper of the tumor was reached. Downwards the incision was carried as far as the sternum. The dissection on each side of the tumor was made with great care and mainly with the points of dissecting forceps and Kocher's struma director. The superior and inferior thyroid arteries were isolated and divided between two Kocher's hæmostatic forceps. With great difficulty the post-sternal portion was lifted from its bed, and here the minutest precautions were exercised to secure every vessel before it was divided. The recurrent laryngeal nerve on the left side was exposed and drawn out of the way with blunt hooks.

The tumor seemed to spring mainly from left lobe, and a part of the isthmus and entire right lobe could be left intact. The tumor was separated from the isthmus by tearing, which caused considerable bleeding, for the arrest of which a number of ligatures were required. I should think at least fifty ligatures were used during the operation, which lasted nearly two hours. The wound was frequently irrigated with a 1–1,000 solution of corrosive sublimate. A drain was introduced into the most dependent angle of the wound, and the balance of the wound was sutured. A large dressing of dry sublimated gauze and cotton was applied.

The second operation of this kind was made on a man 40 years of age who had had a goitre as long as he could remember. Although of considerable size, it gave rise to no serious trouble until quite recently. Lately it has been growing quite rapidly, and at present he suffers from great dyspnœa after the slightest exertion. The patient is very anæmic. The tumor is quite firm and its lower margin can be felt. The operation was the same as in the foregoing case, and that on account of firm adhesions to adjacent parts anteriorly the dissection in this locality was attended by great difficulty, as it was not easy to decide between tumor tissue and adherent parts. Near the base, where no such adhesions existed, the separation proceeded rapidly and without any accidents. The thyroid arteries were larger than the radial vessels. I noticed that wherever it was possible the hæmostatic forceps were always applied across the vessels, which not only afforded better security in controlling the hæmorrhage, but also facilitated the application of the ligatures. In both cases the trachea was found considerably compressed and flattened, but no trouble appeared from this source, and the relief afforded by the operation was prompt and lasting in each instance. Both specimens on examination proved to be adenomata with cystic degeneration. Both patients were reported as doing well a week later.

The first day I was in Zurich I was present at a very interesting autopsy made by Professor Klebs upon one of Krönlein's patients. A few days before a woman 40 years of age was brought into the hospital presenting well-marked symptoms of intestinal obstruction, which had lasted for two weeks. On examination no cause for the obstruction could be found. The examination was not satisfactory, as the abdomen was very tympanitic. Laparotomy was performed, but as nothing could be found and the small intestines were found enormously distended throughout, inguinal colotomy was performed. The operation was followed by decided relief, the abdomen collapsed and a large quantity of fæces was discharged through the artificial anus; but the patient died of collapse the next day. At the post-mortem examination the cause of the obstruction was found 20 ctm. below the artificial anus in the shape of a narrow annular carcinomatous stricture of the colon. In his remarks on the case Professor Krönlein stated that he had observed four similar cases during the time he has been in Zurich. It is not unusual that such a stricture gives rise to no symptoms until suddenly symptoms of complete intestinal obstruction are developed. It would be well in the future, when a similar condition is suspected, to explore if need be the upper portion of rectum and lower extremity of colon as far as accessible by Simon's method, as in case the lesion is recognized and accurately located these cases are favorable for a radical operation by excision.

Professor Klebs kindly showed me his laboratory and many very valuable specimens in his collection. He has just completed the first volume of his great work on pathology, which is to appear in three volumes. Although somewhat advanced in years, he remains at his post from morning until evening ever ready to impart information to the seekers for knowledge. If the remaining volumes are to be judged by the first his work will be the most complete and perfect text book on pathology.

Dr. Rohrer, Privat-Docent for Otology, is an enthusiast in his specialty. He works daily from one to two hours with Prof. Klebs and has prepared one of the finest collections of the comparative anatomy on the ear in the world. He is also pursuing bacteriological studies with special reference to diseases of the ear. I spent a profitable afternoon in his private clinic and was astonished with what care and patience he examines his patients. Supplied with all modern instruments for investigation he is enabled in all cases to locate the pathological conditions with precision and on the basis of a correct diagnosis in obscure cases, he is prepared to adopt a rational and often successful course of treatment in cases heretofore considered incurable. He is one of the most active and influential members of the International Congress of Otology, and if he continues in the future as he has done in the past will soon stand at the head of his specialty.

N. SENN.

DOMESTIC CORRESPONDENCE

TRANSFUSION OF BLOOD.

Dear Sir:—In THE JOURNAL of April 9, you published a letter from me criticising an article by Prof. Hunter, of Edinburgh, on the subject of transfusion. In that letter I insisted that Prof. Hunter's conclusions were formulated on theories which were in dis-

pute and inconclusive, and that the published results of this operation showed it to be of permanent benefit, when successfully performed.

In THE JOURNAL of July 9 and 16 is published a lecture by Prof. H. von Ziemssen, on "Subcutaneous Blood Injections," which fully sustains my position. Prof. Ziemssen says: "I am convinced that in these cases (pernicious anæmia) the hæmoglobin is not merely temporarily improved, but a cure may be obtained, possibly by the action of the blood in a way unknown to us." In his opinion the therapeutic value of blood is so great as to more than counterbalance the depressing effects of chloroform narcosis, the massage, which is so severe that the administration of chloroform is rendered necessary; the pain attending the introduction of the canula from twelve to fifteen times "through a raised fold of the skin deep into the subcutaneous cellular tissue;" the stretching and tearing of the tissue under the powerful massage (see THE JOURNAL, July 9, p. 37); the chilling effects of the use of an ice bladder "renewed as long as the pain continues" (from two to six days); and in addition to all this, the "ecchymoses which frequently, but not always, result from the injections."

Nor is the blood, the value of which more than counterbalances all this, of unimpaired value and vitality? It has been exposed to the air, whipped, subjected to a powerful massage, and so changed that it does not take its place among the blood corpuscles of the patient, but only serves to increase the hæmoglobin. We need no tables to show this: Let any one interested in the subject beat some freshly drawn blood as violently as it must be treated in the defibrinization and massage to which it is subjected in the process of subcutaneous injection, and he will find, if he place it under the microscope, that the corpuscles are either partially or wholly destroyed. Now, if blood be so valuable after having been deprived of its fibrin and of the blood plaques (or elementary corpuscles), exposed to the air, chemically changed (for Blundell proved, by his experiments, that blood changes chemically when out of living tissue longer than three seconds), how much more valuable would be a transfusion, in which the blood, unimpaired and unchanged—just as good as new—should be transferred to the patient's veins with no greater pain than is caused by once opening the smallest and most readily accessible vein in the venous system? This, too, without any disturbance to the heart; for the experiments of Worm-Müller have shown that where the blood is unmixed with air, if the transfusion be slow, the heart rapidly accommodates itself to wide changes in the blood pressure "without any pathological phenomena" (Ziemssen's Cyclopædia, article "Transfusion"). Roussel ("Transfusion") records fifty-four direct transfusions, in not one of which was there any heart disturbance.

In my own experiments in the presence of Professors Vaughan and Langley, of the University of Michigan, I transfused 17 ozs. of blood *rapidly* from the vein of a strong, healthy sheep into the vein of a small, weak one (which was just recovering from the effects of a broken leg). As soon as the operation was completed the animal was released, and was one of the *fleetest runners* I ever saw (Professor L. attempted to catch him, without success).

But it is the almost universally received opinion that direct transfusion cannot be safely performed. Immermann (Ziemssen's Cyclopædia, Transfusion) says: "No instrument has yet been devised with which the operation can be safely performed." Dr. T. Gaillard Thomas, of New York, has said: "Transfusion is an operation the theoretical importance of which all will admit, but practically it amounts to very little indeed, mainly on account of its difficulties and dangers, nearly all of which arise from the tendency of the blood to coagulate" (*Medical Record*, 1878). In another communication I propose to discuss the proposition suggested by these quotations.

That blood introduced into the circulation by artificial means has a wonderful effect on both the living and the dead, is proved already beyond question. Its effect upon the living is shown by the reported cases of transfusion, particularly by Roussel. Its effect upon the dead was shown by the experiments of Brown-Séquard. "Brown-Séquard has discovered that all the nerves and contractile tissues in the brain and spinal cord, the motor and sensitive nerves and muscles of animals or organic life, the iris, the skin, etc., may, after having lost their vital powers, and their life, recover these properties again and, in some respects, be again resuscitated when blood, containing a great amount of oxygen, is injected into the arteries of all those parts. Still more, he has found that when cadaveric rigidity exists in the limbs of man or animals, oxygenated blood has the power of restoring local life in those parts. These experiments were made on many animals and on the arms of two decapitated men, thirteen and fourteen hours after death. The more blood corpuscles and oxygen the blood injected contains, the greater the power of regeneration. In one case, Brown-Séquard maintained local life in a limb for forty-one hours after it was separated from the body" (American Encyclopædia, p. 735).

Now, I do not claim, from the above quotation, that transfusion can raise the dead. Indeed, it is a serious question whether it can raise the living, and the results of my investigations lead me to claim far less for the operation than have some medical authorities.

The question which I next propose to consider is, Can the operation be safely and easily performed?

E. E. ALLEN.

Chicago, August 9, 1887.

COLD ABSCESS AND ERYSIPELAS.

Dear Sir:—About May 1 I was called to see Mr. F., aged 78, feeble and quite fleshy, who had a large abscess over the right scapula. It was opened and a large quantity of pus evacuated. The skin over it was of a dark purple color, and sloughing seemed imminent, but evacuation and drainage caused it to heal without refilling. Prompt recovery took place.

His wife nursed him and dressed the abscess, a 10 per cent. solution of carbolic acid being used. A week after the abscess was opened Mrs. F. was taken

with facial erysipelas of a severe type, which ran a course of about 14 days. Towards the last the disease attacked the right leg just above the ankle; an abscess formed and pus was evacuated, and recovery followed.

The origin of the cold abscess of Mr. F. could not be ascertained; there was no history except of a slowly formed swelling; but the wife's erysipelas could be seemingly traced to infection from the abscess while nursing her husband. A microscopic examination of the pus from the two abscesses would have been interesting. It seems that septic infection is the only way to account for Mrs. F.'s erysipelas.

A. D. BUNBY, M.D.

St. Ansgar, Iowa, July 15, 1887.

NEW INSTRUMENTS.

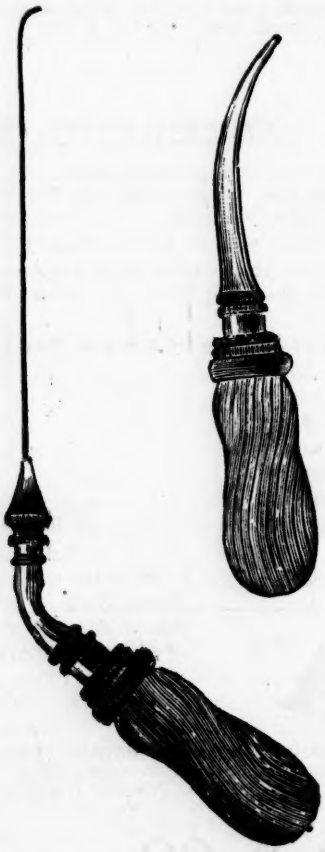
MODIFICATION OF DUNN'S DENTAL SYRINGE.

Read before the Chicago Society of Ophthalmology and Otology, February 8, 1887,

BY J. ELLIOTT COLBURN, M.D.,

PROFESSOR OF OPHTHALMOLOGY AND OTOLOGY IN THE CHICAGO POLICLINIC; ASSISTANT SURGEON TO THE ILLINOIS CHARITABLE EYE AND EAR INFIRMARY, ETC.

I wish to call your attention to a modification of Dr. Dunn's Dental Syringe, which renders it of practical value in the treatment of lachrymal disease. It is made with the curve of the Bowman probe, olive-pointed, and conical in shape. The instrument can be used with or without the slitting of the canaliculus. It can be more delicately manipulated than the piston syringe, and has the merit of being always ready for use. In chronic catarrh of the sac, it is eminently convenient, as it enables the operator to use strong astringent solutions without danger of regurgitation into the conjunctival sac. In cases of stenosis of the nasal duct it is useful as it can be entered the same as a probe and the operator can force remedies into the nose without wounding the tissues. At my suggestion Haussman, McComb & Dunn, of Chicago, have added a convenient tip for medicating the middle ear, being a slight modification of Anel's syringe. Altogether it makes the most convenient form of lachrymal and middle ear syringe: it is light, strong and durable, capable of great force and delicate manipulation.



MISCELLANEOUS.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM AUGUST 20, 1887, TO AUGUST 26, 1887.

Lieut.-Col. Joseph C. Baily, Asst. Medical Purveyor, granted leave of absence for one month. Par. 10, S. O. 191, A. G. O., August 18, 1887.

Major W. S. Tremaine, Surgeon, found incapacitated for active service by an Army Retiring Board, and extension of leave of absence on account of sickness still further extended until further orders. Par. 9, S. O. 192, A. G. O., August 19, 1887.

Major John H. Bartholf, Surgeon, leave of absence extended one month. Par. 7, S. O. 196, A. G. O., August 24, 1887.

Capt. Julius H. Patzki, Asst. Surgeon, granted leave of absence for one month. Par. 15, S. O. 196, A. G. O., August 23, 1887.

Capt. Washington Matthews, Asst. Surgeon, ordered to proceed to Phoenix, Ariz. Ter., on public business, and on completion thereof, to return to his proper station. Par. 21, S. O. 195, A. G. O., August 23, 1887.

Capt. Blair D. Taylor, Asst. Surgeon, granted leave of absence for twenty days, to take effect on or about August 31, 1887. Par. 7, S. O. 193, A. G. O., August 20, 1887.

First Lieut. E. L. Swift, Asst. Surgeon, ordered to report in person to Commanding General Div. Pacific, for duty with troops at Round Valley Indian Reservation. Par. 20, S. O. 195, A. G. O., August 23, 1887.

Capt. Henry Johnson, Medical Storekeeper, ordered, in addition to his present duties, to take charge of the office and perform the duties of acting Asst. Medical Purveyor in New York City during the temporary absence on leave of Lieut.-Col. Jos. C Baily, Asst. Medical Purveyor. Par. 11, S. O. 191, A. G. O., August 18, 1887.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE HOSPITAL SERVICE FOR THE WEEKS ENDING AUGUST 27, 1887.

Surgeon P. H. Bailhache, granted leave of absence for thirty days. August 26, 1887.

P. A. Surgeon H. R. Carter, granted leave of absence for twenty-seven days. August 25, 1887.

P. A. Surgeon H. W. Yemans, resignation accepted, to take effect September 30, 1887, and leave of absence extended to that date. August 24, 1887.

Seaton Norman, granted leave of absence for six days, on account of sickness. August 27, 1887.